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Costs and Benefits of Deregulating Telecommunication Markets in the Pacific

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Preface

This report was prepared for the Pacific Islands Forum Secretariat (PFIS) in Suva, Fiji Islands. The report is one output of an Asian Development Bank (ADB) technical assistance project (TA 6226 REG): "Developing and Implementing the Pacific Plan for Strengthening Regional Cooperation and Integration." The Commonwealth Secretariat provided funding to the project.

The lead author of the report was Dr. Roman Grynberg, Deputy Director of Trade and Regional Cooperation at the Commonwealth Secretariat. He was assisted by Michael Hyndman, a cost-benefit analyst contracted by ADB, and Sacha Silva, an economist contracted by the Commonwealth Secretariat. Consultants from PIFS and the Pacific region provided valuable inputs for the report. Bill Costello was the ADB task manager.

The report is published in three volumes. Volume 1 is the Executive Summary. Volume 2 is the main report. Volume 3 contains the working papers commissioned for the report–a series of independent studies assessing potential benefits and costs of implementing a variety of possible regional initiatives. Volume 3 has been printed in hard copy in only limited numbers. However, it is available on the websites of ADB (www.adb.org) and at www.pacificplan.org.

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EXECUTIVE SUMMARY

This study provides an assessment of the economic costs and benefits of deregulating the telecommunication markets in the Pacific Island countries. It was conducted in June 2005 as part of the Pacific Plan research program. The study makes use of the tariff and revenue data available in the April 2005 edition of the International Telecommunications Union Data Base, the Asia-Pacific Telecommunity 2004 Yearbook and many research publications and case studies from websites.

A. Main Findings

1. International case studies of telecommunications deregulation undertaken by the International Telecommunication Union and other researchers clearly demonstrate the substantial economic benefits that result from opening monopoly government-dominated telecommunication markets to private sector competition by licensing new providers. The research shows that competition results in improved service quality and lower prices, a higher level of investment in new infrastructure, more rapid adoption of new technology, increased bandwidth and improved productivity and efficiency in the use of resources. Competitive telecommunications markets will generate substantial net economic benefits to the citizens of the Pacific Islands in all consumer groups including: urban and rural residential subscribers, private sector business firms, schools and universities, and public enterprises and government department and agencies. All consumers stand to gain and the costs of regulation are tiny.

2. The economic benefits to consumers in the Pacific islands from lower telecommunication charges for international calls, mobile calls and Internet usage are estimated to be US$66 million a year for the Forum Island countries (FICs) as a whole, based on the assumption that the telecommunication markets are fully competitive with strong price competition among the providers operating on a level playing field. It is assumed that the regulator will ensure that new entrants have access to the fixed line network owned by the former monopoly provider at fair access rental rates. This economic benefit is in the form of consumer surplus.

3. Over a five year period, the total consumer surplus resulting from deregulation and competition in the FICs is estimated to have a present value of United States dollars (US$)285.9 million at a 5% discount rate and US$250.9 discounted at 10%. These estimates are based on FICs revenue data drawn from the International Telecommunications Union (ITU) Database 2005 edition, on total telecommunications revenue for Pacific Island ITU member country and a set of assumptions about the likely level of reduction of call charges resulting from competition, the response of telecoms to the threat of competition in contestable markets, the profitability of different market segments and the price elasticity of demand for telecommunication services. Almost all the consumer surplus is estimated to come from a sharp reduction in international telephone call rates and peak rate mobile phone rates and Internet charges.

4. The introduction of competition will also lead to improved service quality and a more rapid increase in bandwidth but no attempt has been made in this study to estimate the monetary value of quality improvement based on the willingness of consumers to pay. The New Zealand (NZ) experience with telecommunication deregulation shows that the benefits of quality improvement may be greater than the benefits from call rate reductions. The benefits to New Zealand consumers were improved service availability, in terms of access to new services, fault service response, and new service installation times.

5. The longer-term dynamic impacts of deregulation and the development of competitive telecommunication markets will be most beneficial for private sector development, trade and investment promotion and will support the generation of an estimated 20,000 new jobs in information and communication technology (ICT)-enabled businesses such as call centres and back office services.
6. International case studies demonstrate that the costs of providing high quality regulation of the telecommunications markets following the introduction of competition are minimal and usually less than 1% of industry total revenue.
7. It is important for FIC governments to allocate sufficient resources to strengthening national utilities regulatory authorities and to enact appropriate modern regulatory laws and regulations prior to deregulation to support the introduction of strong and fair competition.
8. International experience demonstrates that it is not necessary to maintain a public telecommunications monopoly in order to cross-subsidies the provision of telecommunications services to rural areas and remote island communities through profits by from international calls. The universal service objectives of expanding services to rural areas can be achieved by establishing a universal service fund and requiring all telecom providers to contribute to the fund. It may then be used to provide universal service obligations through contracting out these activities to providers.
9. There are likely to be substantial cost savings and economic benefits from all FICs enacting a common set of E-commerce laws. Most governments have recognized the need for new laws to support national ICT policy and ICT development plans. Fiji Islands, Cook Islands and Tonga have made good progress in drafting a set of modern e-commerce laws benchmarked on international best practice. A regional approach to e-commerce laws has many advantages.
10. There may be a sound case for establishing a Pacific Islands regional telecommunication authority similar to the Eastern Caribbean Telecommunications Authority to promote liberalization and fair competition, harmonization of regulations and policies, universal service, fair pricing, access to advanced services, and overall sector development across the Pacific Islands. There are likely to be substantial economies of scale and other technical advantages from adopting a regional approach to industry regulation especially since the smaller FICs may not be able to attract professionally skilled ICT regulatory specialists to lead the national regulatory authorities.

B. Recommendations

1. All Pacific Island countries should deregulate their telecommunications markets and at the same time establish effective national regulatory authorities to ensure all new and existing operators play by the rules of fair competition. The regulator should ensure that not single operator can exploit a dominant market position to unfairly prevent competition or to establish barriers to entry. There should be a level playing field.
2. Governments should establish a telecommunications community service fund and require all operators to make contributions to the fund based on capacity to pay and an equity formula. The fund should be used to finance and subsidize the provision and expansion of services to consumers residing rural and remote areas.
3. A regional approach to the development of e-commerce cyber laws should be adopted to ensure all countries enact the same unified set of modern laws and regulations.
4. A regional approach should be adopted for the institutional strengthening and technical

support for national utility regulatory authorities. The Forum Island Countries (FICs) should establish a Pacific Islands regional telecommunication authority similar to the Eastern Caribbean Telecommunications Authority to assist member countries deregulate their telecommunications sector.

5. A regional undersea cable project should be implemented under the leadership of Pacific Islands Forum Secretariat (PIFS) to link all FICs to the Southern Cross cable network. (See Appendix 3, Undersea Cable Proposal.)

Table 1 provides an estimate of the likely level of economic benefits that will be received by consumers in each FIC as a result of deregulation of telecommunication markets in the Pacific Islands. The benefits take the form of consumer surplus that consumers will receive as a result of competition driving down the tariffs for international telephone calls, mobile telephone calls and Internet usage.

It is important to note, that theses calculations of the level of consumer surplus are based on the limited amount of revenue data that is made publicly available by the Pacific Islands telecommunications authorities to the International Telecommunications Union database and in some countries from statistics in their annual reports. More precise estimates of the economic benefits from competition could be made providing that the Pacific Islands telecommunications authorities are willing to make available detailed historical accounting information on their sources of revenue from different services and their revenue and cost projections for the next five years. However, most Pacific Islands telecommunications authorities do not publish statistics showing the amount of revenue they earn from different services such as international telephone calls, national long distance calls, local calls, and mobile calls but they report their revenue in an aggregated format. For the purposes of this study, it has been necessary to make estimates of international call revenue for each country. These estimates have been made using the expenditure ratios that prevail in Fiji Islands in 2004. The assumptions made about the price elasticity of demand in this report are based on the findings of a 2003 report undertaken for the New Zealand Commerce Commission and the elasticities contained in the World Bank Telecommunications Regulatory Handbook (2000). The NZ Commerce Commission 2003 study provides a comprehensive review of international research studies on the price elasticity of demand for fixed line and mobile telecommunications services.

Table 1: Benefits to Consumers from Deregulation of Telecommunications

Country	Consumer Surplus ($US million for one year)	Consumer Surplus ($US millions 5 years discounted at 5%)	Consumer Surplus ($US million 5 years discounted at 10%)
Cook Islands	0.32	1.39	1.21
Federated States of Micronesia	2.61	11.30	9.89
Fiji Islands	26.25	113.60	99.50
Kiribati	0.95	4.11	3.60
Marshall Islands	1.43	6.19	5.42
Nauru	0.32	1.39	1.21
Palau	1.74	7.53	6.60
Papua New Guinea	25.20	109.10	96.18
Samoa	1.39	6.02	5.27
Solomon Islands	2.51	10.87	9.51
Tonga	0	00	00
Tuvalu	0.32	1.39	1.21
Vanuatu	2.98	12.90	11.30
Total	**66.07**	**285.80**	**250.90**

Table 2 illustrates the economic costs and benefits to the main stakeholder groups.

Table 2: Economic Benefits and Costs of Information and Communication Technology Deregulation in the Pacific Islands

GROUP	COSTS	BENEFITS
Urban Residential Consumers		• Reduced tariffs • Increased consumer surplus • Improvement in ICT service quality • Choice of providers
Rural Consumers	Slower roll out of fixed-line network to isolated locations that are uneconomic	• Reduced cost of some ICT services • Improved quality of services • Introduction of new wireless services
Private Businesses		• Reduced business ICT costs • Businesses more competitive globally • Expanded use of Internet for business functions • Opportunities for new Business Process Outsourcing contracts
Government and other public utilities		• Reduced cost of ICT services for government departments and public enterprises • Improved Internet services and more rapid introduction of e-government • Increased government revenue from a more rapid growth of ICT total revenue
Regulator for ICT	Need to strengthen regulation to ensure strong competition on a level playing field	
Monopoly ICT Provider	• Loss of monopoly market power • Loss of opportunity to make supernormal profits • Pressure to reduce costs and to excess staff • Lower incentive to invest in long term capital infrastructure • Reduced capacity to repay loans for previous capital investment • Reduced market share • Strong price competition from new competitors • Need to improve productivity	
New ICT providers		• Opportunity to enter new profitable market • Opportunities to test new technology in small markets
Educational Institutions		• Reduced cost of Internet for e-learning

I. REGULATORY BARRIERS IN THE PACIFIC ISLANDS

The main regulatory barrier that prevents a new entrance from starting up a business in a telecommunication sector in the Pacific Islands is the requirement to have an operating license granted by the government. In most Pacific Island Countries (PICs), the government owned monopoly provider has an exclusive license to provide telecommunication services for a fixed period, usually for a 10-15 year period. This form of license guarantees the monopoly status of the provider. The providers have argued that the exclusive license gives them more confidence to invest in long-term infrastructure projects, based on more certain projections of their future earning and capacity to service infrastructure loans. The government monopoly providers also have had responsibilities for achieving universal service objectives. This responsibility involves them in investing in expanding the telephone network to new consumers in rural areas. Most urban consumers are already well serviced by the authorities. However, there are still many potential consumers located in rural areas and remote islands that want telephone services. Their capacity to pay is very limited and governments have generally cross-subsidized these uneconomic services from the high profits they have made from international telephone calls.

Establishing a new telecommunications business in any of the Forum Island Countries (FICs) is a complex business undertaking requiring many different forms of approval. A foreign company wishing to enter the market firstly requires approval from the telecommunications regulator in the form of a license. Foreign investors are generally required to gain government approval under a foreign investment act. Approvals are required for work permits for expatriates, foreign exchange dealings, registration of the company, leasing of land and industrial space, to name a few. The many constraints to private sector development and investment in the Pacific Islands has been recently analysed by the Asian Development Bank (ADB) 2004, in a report entitled *Swimming Against the Tide?: An Assessment of the Private Sector in the Pacific* by Paul Holden, Malcom Bale, and Sarah Holden.

With reference to establishing a new telecommunication business, some of the important issues that investors would take into consideration are as follows:

- Remoteness from foreign suppliers of telecommunication equipment adding to the unit cost of inputs.
- Small size of telecommunication market impacting on the ability of firms to gain economies of scale.
- High cost of electricity for operating telecommunication equipment.
- High cost of access to communications satellites.
- Lack of access to international under-sea cable network for most FICs.
- High cost to new entrants of buying access to consumers from the former monopoly through its fixed line network.
- Opportunity to use power lines for access to consumers.
- Availability of skills telecommunications staff.
- Unfair competition and restrictions from former monopoly provider.
- Low capacity of rural consumers to pay for telecommunication services.
- Ability to developed prepaid systems for all information and communication technology (ICT) services.
- Difficulty in finding a suitable joint-venture partner that is required in some countries as a condition for foreign investment approval.
- Unstable economic policy environment making it difficult for long-range planning.
- Ability to repatriate profits to foreign destinations.
- High tax environment and uncertainty about future level of company and value added tax.

- Political instability and ethnic tension increase the risk factor for telecommunications investors

II. COMPARATIVE ANALYSIS OF TARIFFS

A. Key Features of Pacific Island Country Telecommunications Markets

- Teledensities are comparative low with large differences between rural and urban areas.
- Rural areas are well served with fax, paging, cellular and Internet services.
- Most rural areas are poorly served with telecommunications and some have no electricity available to operate a telephone system.
- New technology is transforming the national networks, examples included the launch of GSM in Papua New Guinea (PNG), wireless broadband in Niue and Tonga, ADSL in French Polynesian, SMS in New Caledonia and Fiji Islands.
- Telecommunications service providers are mainly state owned monopoly with exclusive long-term licenses.
- Partial privatization has commenced in different market segments in the Cook Islands, Fiji Islands, Kiribati, Marshall Islands, PNG, Samoa, Solomon Islands, Tonga and Vanuatu.
- Privatization by new entrance has focused on cellular and Internet services.
- The Southern Cross and Pacific Rim cables transit the region and are linked to Fiji Islands and Guam only.
- The Internet has been slow to come to the region beginning first in Fiji Islands in 1995.
- Internet is limited by bandwidth constraints and in some locations lack of access to telephone systems.
- Choice of Internet service providers is available in Papua New Guinea, Samoa and Tonga, and will soon be available in Fiji Islands.
- Internet dial up rates are high and broadband is now coming to the region. Fiji Islands is introducing broadband in 2005 and wireless broadband is available in Tonga.
- PICs are developing national ICT policies, strategic plans and new regulatory frameworks.
- Mobile phone use is growing rapidly and most of the mobile telephones use a prepaid system.
- A number of countries are upgrading from analogue to digital including: Kiribati, Samoa, Solomon Islands, Marshall Islands and Cook Islands.
- Tuvalu, Tokelau, and Wallis and Futuna Islands have no mobile network.
- Governments recognise the benefits of a common vision for Pacific Telecommunications including regional harmonization of telecommunication, inter-connectivity and network procedures.

The next section of the report is based on data provided in the International Telecommunications Data Base.

B. International Telecommunications Union Data Base

The International Telecommunications Union (ITU) Database (http://www.itu.int) is the most important international source of reliable data. It provides key statistics on most aspects of

telecommunications markets for almost all countries in the world. The cost information is shown in United States dollars. All the charts in this report have been prepared from the data in the ITU database. The data is drawn from the April 2005 update of the database that can be purchased on-line from the ITU website at www.iti.int.

The database allows the users to select a set of countries and prepare tables and charts on selected issues such as the average cost of a 3-minute mobile call during peak or off-peak hours.

One of the weaknesses of the ITU database is that it does not provide information on the tariffs for international calls. This is because there are so many different rates from a wide range of providers of international calls between all the countries, thus making it difficult to prepare a meaningful report.

The Table 3 from the April 2005 edition of the ITU database on the Solomon Islands illustrates the information in the database. Note that some information has not been provided to the ITU.

Table 3: Solomon Islands Telecommunications Data

SOLOMON ISLANDS	2000	2001	2002	2003
Total telecommunication service revenue (US$)	11994106	12092453	..	..
Cellular - cost of 3 minute local call (off-peak) (US$)	1.202358	1.154717	0.906667	..
Cellular - cost of 3 minute local call (peak) (US$)	1.202358	1.154717	0.906667	..
Cellular mobile telephone subscribers (Total)	1151	967	999	1488
Cost of a local 3 minute call (peak rate) (US$)	0.090373	0.086792	0.068148	0.061252
Coverage of population (%)	35	..	..	..
International outgoing telephone traffic (minutes)	2996647	5907270	..	..
International incoming telephone traffic (minutes)	6648912	..	..	..
Internet subscribers	1150	906	988	1000
Internet users per 100 inhabitants	0.47563	0.462675	0.49508	0.524109
Main telephone lines in operation	7689	7389	6601	6238
Main telephone lines per 100 inhabitants	1.828559	1.709352	1.485464	1.307757
Business telephone connection charge (US$)	44.77603	43.00189	33.76445	30.34754
Business telephone monthly subscription (US$)	9.430255	9.056603	7.111111	6.391478
Cellular connection charge (US$)	37.31238	35.83396	28.1363	..
Cellular monthly subscription (US$)	8.911592	8.558491	6.72	..
Main telephone lines in largest city	6704	..	..	..
Residential monthly telephone subscription (US$)	7.544204	6.037736	4.740741	4.260985
Residential telephone connection charge (US$)	49.11591	37.92075	29.77481	26.76165

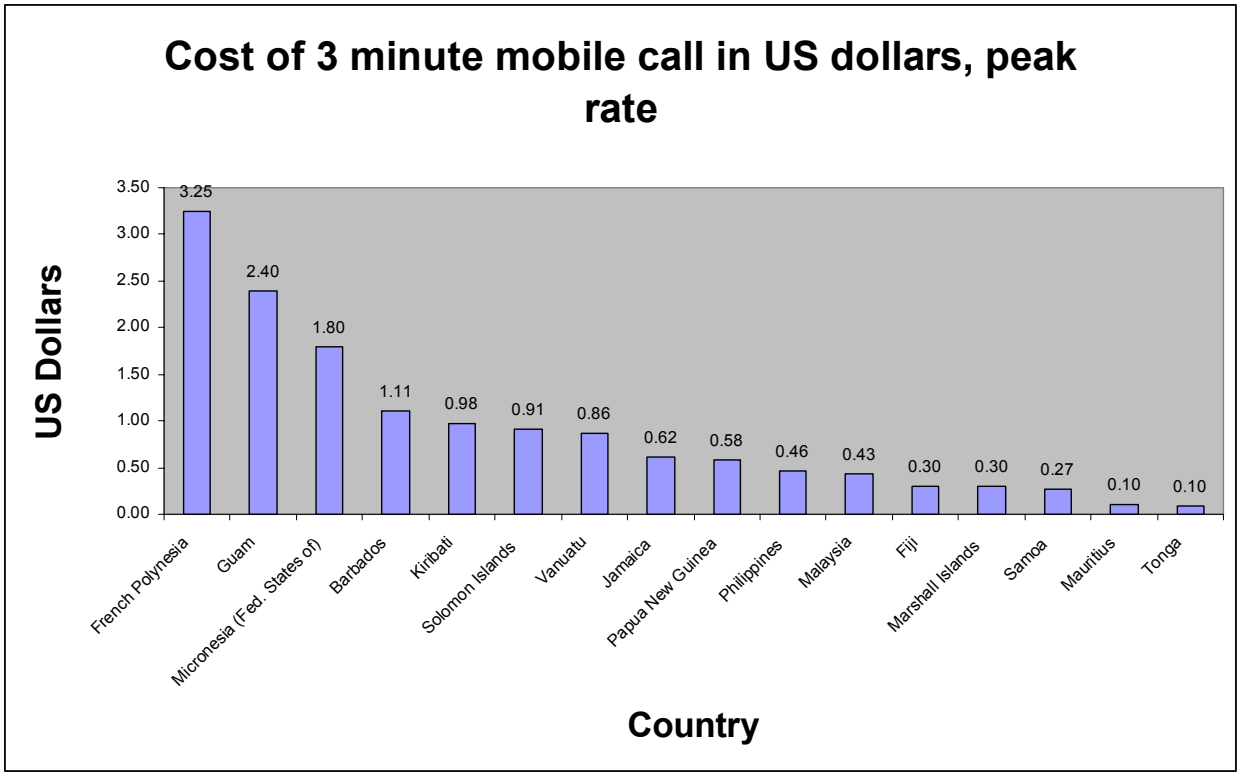
Source: International Telecommunications Union (ITU) Database (http://www.itu.int).

Table 4 shows the same data for Papua New Guinea. It shows that total telecommunications revenue has not been reported to the ITU since the year 2000. The failure of countries to supply the full set of national data to the ITU creates problems for data base users and reduces the value of this most valuable research tool.

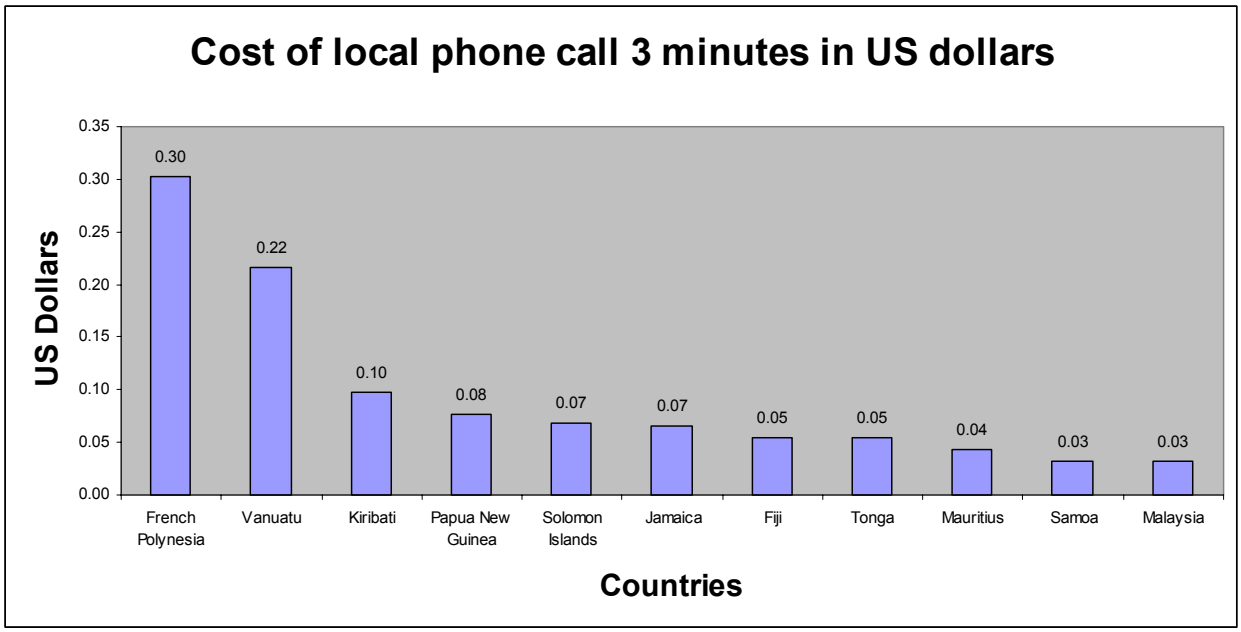
Table 4: Papua New Guinea Telecommunications Data

PAPUA NEW GUINEA	1999	2000	2001	2002
Total telecommunication service revenue (US$)	72979224	79150048	..	..
Cellular - cost of 3 minute local call (off-peak) (US$)	0.700389	0.809353	0.663717	0.576923
Cellular - cost of 3 minute local call (peak) (US$)	0.700389	0.809353	0.663717	0.576923
Cellular mobile telephone subscribers (Total)	7059	8560	10700	15000
Cost of a local 3 minute call (off-peak rate) (US$)	..	..	..	..
Cost of a local 3 minute call (peak rate) (US$)	0.311284	0.359712	0.064897	0.076923
Coverage of population (%)	..	..	..	..
International outgoing telephone traffic (minutes)	25200000	23739964	24900000	..
International incoming telephone traffic (minutes)	19576326	19209144	..	..
Internet subscribers	..	27000	..	..
Internet users per 100 inhabitants	0.703716	0.877131	0.944287	1.372621
Main telephone lines in operation	59773	64835	62000	62000
Main telephone lines per 100 inhabitants	1.201806	1.26375	1.170916	1.1347
Mobile communication revenue (US$)	3881869	4190803	..	..
Annual investment for telephone service (US$)	..	..	..	..
Business telephone connection charge (US$)	217.8988	201.4388	14.74926	12.82051
Business telephone monthly subscription (US$)	4.163424	3.852518	3.159292	5.128205
Cellular connection charge (US$)	466.9261	431.6547	26.54867	23.07692
Cellular monthly subscription (US$)	77.82101	89.92805	11.79941	10.25641
Main telephone lines in largest city	29107	29107	..	..
Number of local telephone (minutes)	26000000	31950000	..	..
Residential monthly telephone subscription (US$)	1.167315	1.079137	1.179941	1.794872
Residential telephone connection charge (US$)	46.69261	43.16547	14.74926	12.82051

Source: International Telecommunications Union (ITU) Database (http://www.itu.int).



Source: International Telecommunications Union (ITU) Database 2002 data (http://www.itu.int).



Source: International Telecommunications Union (ITU) Database 2002 data (http://www.itu.int).

C. Price Benchmarking in the Pacific

The 2003 study by Halvor Sannaes and Teligen developed a model to analyse the Pacific Telecommunication Market. It developed the Pacific PSTN Basket based on Organisation for Economic Co-operation and Development (OECD) basket structure. The OECD basket model is a reference for regulators and operators around the world. The basket for the Pacific provides generalized information for Pacific Island Countries telecommunications markets. It

does not reflect a single country, but a cross-section of information provided by national operators in each country. The basket has been used to analyse residential use of telephones and it found that on average 80% of calls are to local and national fixed lines telephones. It reports that 7% of calls made by consumers are to mobile phones. 13% of calls are international calls, however they account for 46% of telephone revenues. The distributions of telephone calls over the day, shows that: 54% are made in the daytime, 25% in the evenings and 20% on weekends. The tariffs in the baskets are from 11 Pacific Island Countries (PICs) plus a few other countries for reference. Across the PICs there is a wide variation in telephone tariff levels and price structures. Most PICs have very high international telephone call charges that are used to subsidized local calls and services to uneconomic rural areas. The monthly costs of line rentals are low is comparison to developed countries. Most PICs are in need of tariff rebalancing, however, tariffs have not been rebalanced because it is convenient for countries to cross-subsidise rural telephone users from the high profits made from international calls. Only four out of the 11 countries have some form of off-peak telephone call pricings where the tariff differs from off-peak to peak periods. Many countries have changed the prices of their services (tariffs) over the last year (2004).

An interesting result of this study is that on average 46% of the total expenditure by residential users is for international telephone calls. There is no data on the percentage of total cost of international calls made by private sector enterprises.

D. Comparison of Pacific Island Country Tariffs with Other Countries

The 2003 Halvor/Teligen study found that PICs telephone tariffs are more expensive than OECD countries especially for international and national long distance calls. The PICs telephone charges for line rentals and local calls are generally cheaper than OECD countries. The study compared the Pacific with other developing countries in Eastern Europe and found that in these countries tariffs were also way out of balance with the cost of providing services. A common feature of the East European and PIC tariff structure is very low line rentals, cheap local calls, expensive long distance calls to other parts of the country and very expensive international calls.

E. CASTALIA Strategic Advisors Report

Public Infrastructure Review, October 2004, Report for the World Bank

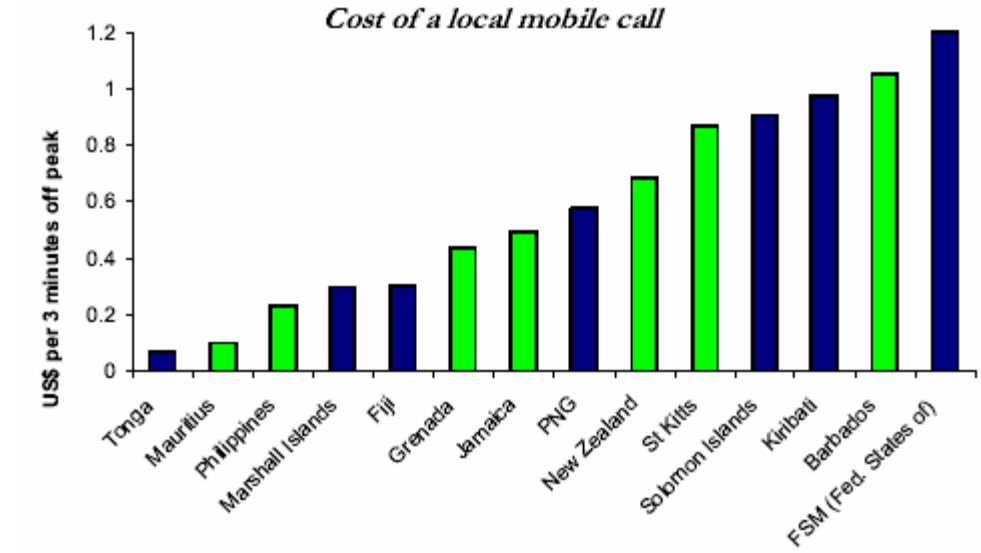
The Castalia Report (2004) covers public infrastructure development in the telecommunications, electricity, water and sanitation, roads, ports and marine transport, airports and civil aviations sectors. With regard to telecommunication sector, it undertook a benchmarking exercise with regard to access, universal access, price, quality, and economies of scale. The study notes that the Pacific Islands region is diverse but the countries face some common problems. Only PNG and Fiji Islands are connected to submarine cable systems. The other countries rely on satellite communications systems for international communications. Castalia Report (2004) notes that satellite communications is expensive compared to the cable systems. In addition, electric power which is required for running telecommunication equipment is expensive to purchase, unreliable and in rural areas it is sometimes unavailable. Castalia Report (2004) finds that the PICs have failed to follow the international trend of deregulation, liberalization, increase private sector involvement and in some PICs , the establishment of independent regulatory bodies. In other parts of the world, deregulation has lead to rising access levels and falling costs of international telephone calls. In comparison, most PICs still have government owned monopoly providers and there is little competition or choices for consumers. Castalia Report (2004) notes that the two exceptions are Tonga and Samoa. Both these countries have partial deregulated their telecommunication sectors. Competition has led to substantially lower prices and an expansion of demand for services. These countries are discussed in more details as case

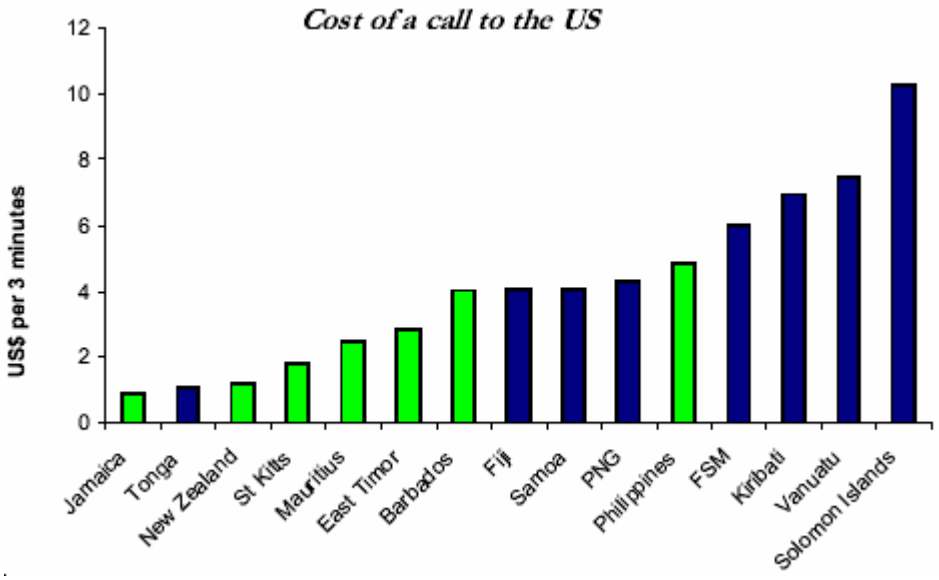
studies in this report in sections III.A and III.B.

With regard to price, the Castalia Report (2004) presents the following graphs to show that many PICs have high international telephone tariffs but local and mobile call charges are similar to comparator economies. Castalia Report (2004) finds that Vanuatu has significant higher rates for local telephone calls. Telecom Vanuatu Limited has a very different price structure for local and regional calls. It has a single fixed-line plan for all business and residential consumers and applies one charge rate for all calls nationwide without any distinction for the calling distance. Local and national calls are all priced the same. The result is that long distance calls within the country are relatively cheap but local calls are expensive. Castalia Report (2004) states that the two countries that have deregulated – Samoa and Tonga – have the lowest rates for local phone calls. Samoa has the lowest rate followed by Tonga. Of the PICs, Tonga has the lowest international calling rates, and Solomon Islands, Kiribati and FSM have some of the highest international calling rates (Castalia Report (2004). The report notes the international trend in mobile and international telephony has been that call charges have fallen significantly with the introduction of competition. Of particular interest is the experience of the Caribbean island nations that have many similarities to the PICs. Liberalisation and the introduction of competition in the Caribbean have led to a substantial reduction of call charges. The Caribbean experience is reviewed in section III.D. of this report. The Castalia report also notes that Tonga is the only PIC with competition in the mobile phone sector and the competition has resulted in the lowest mobile phone call cost in the PICs.

The Castalia Report (2004) found that the cost to consumers of Internet services in the Pacific Islands is higher than most similar countries elsewhere. The Solomon Islands is reported to have the highest monthly Internet charges. The Castalia Report (2004) found that Fiji Islands, Samoa, Kiribati, Tonga and Vanuatu have higher Internet charges than most comparator countries.

Interestingly, the Castalia Report (2004) found that in Samoa, the introduction of competition between the three competing Internet service providers has resulted in a price reduction of 50% in the incumbent ISP and an increase of over 100% in Internet usage. This Castalia Report (2004) observation of Samoan consumer reaction to a reduction in the price of Internet services, demonstrates that the price elasticity of demand for Internet use has a value of 1 or has unitary price elasticity of demand. The Castalia Report also notes that within a year of introducing competition for mobile services, the tariff for almost all services dropped by more than 20% and the number of mobile subscribers and Internet users doubled.





Source: Castalia Report based on ITU 2002 data.

III. CASES OF TELECOMMUNICATIONS SECTOR LIBERALIZATION

A. Tonga Case Study

1. Introducing Telecommunications Sector Competition in Tonga

The deregulation of the telecommunications sector in Tonga provides a very relevant case study of the impact of competition on call charges and telephone usage.

Like most Pacific Island countries, the Kingdom of Tonga, had for many years one monopoly, government-owned telecommunications provider. Now in 2005, it has a competitive market that is efficiently providing consumers with the lowest cost calls in the Pacific Islands. Its experience with liberalization clearly demonstrates that competition can produce significant economic benefits even in a small island country like the Kingdom of Tonga.

2. Tonga Communications Corporation

Tonga Communications Corporation (TCC) was established on the 5th of February 2001 as a Public Enterprise. TCC is governed by a Board of Directors chaired by HRH Prince 'Ulukalala Lavaka Ata. At present the Government of Tonga is the sole shareholder, but there is a plan to invite prospective shareholders to invest in this entity in the future. (TCC Website,2005)

The Company provides a range of local and international voice and data services via a fixed copper network and a GSM cellular network. The Company also provides a variety of Internet and leased-line services. TCC's mission is to provide cost effective, quality telecommunications services to all of the people of Tonga. Local and international telecommunications services are provided by Tonga Communications Corporation (TCC). It also operates the ISP Kalianet and a GSM network U-Call Mobile, which it launched in 1991.

The telecommunications sector was deregulated in Tonga in 2002, when a new competitor, TonFon entered the market and started to compete with the government owned, Tonga telecommunications Corporation that had a monopoly on all telecommunications.

Shoreline Communications trading the name; TonFon, was awarded a license to provide mobile services and launched a GSM service in August 2002, providing mobile coverage across Tonga's main islands and a wireless home phone service. Shoreline Communication Ltd., which is based in Tongatapu is the parent company of Tonfon Tonga, Tonfon Vava'u, Tonfon Ha'apai and Tonfon Eua. These businesses all manage voice, data and video transactions. Voice transactions include the sale of mobile packages, the sale of phone cards, the sale of simm cards and the sale of Home phone packages. Data service is the sale of Internet access packages

> *"The result of competition has been that "telephones are easier to get, cheaper to buy and communication is faster". It has also resulted in the two competing companies upgrading their infrastructures for further use in communications and broadcasting.*
>
> *In a speech in Geneva earlier this year, the Tongan Prime Minister emphasized that the country's vision for ICT is driven both by local market parameters, recognition that the information economy transcends national borders and interests. Expanded connectivity in Tonga will help to stimulate domestic growth and greater participation in an international economy. This recognition has been an important driver of telecommunications market liberalization in Tonga."*

3. Impact of Competition on Mobile Services

Within a year of introducing competition for mobile services, the tariff for almost all services dropped by more than 20% and the numbers of mobile subscribers and Internet users both doubled.

4. Tonfon Enters the Market

Tonfon: "The objective of the company in involving itself in the telecommunications sector is to establish, a technologically competitive communications infrastructure that will offer for the people of Tonga, a wide range of quality telephony and value-added communications services. Moreover, the company will provide these services at the most competitive rates whilst assuring financial balance for its shareholders" Quoted from the Tonfon website.

Call Rates

Tonfon rates are as follows:

TYPE OF CALL	$ PRICE (PER MINUTE)
Local Tongatapu	0.04
Local - interisland	0.10
International	0.70

Mobile Services

Tonfon offers the best mobile services at the lowest rates anywhere in the South Pacific.

Package Plans

Recognising that customers have different demands, Tonfon offers packages that cater for all customers.

Our current package deals:

CELLULAR PHONES	$ PRICE	INCLUDES:	INCLUDES:
Motorola Full	295.00	20 Phone Card	SIM Card
School Kids Motorola Special	95.00	20 Phone card	SIM Card
Buy 1 Get 1 Free Special	190.00	2*20 phone card	SIM Card
Buy in Threes Special	240.00	3*20 phone card	SIM Card

Value-Added Services include: Caller non-ID, Caller ID, Voice Mail, Balance Update
With a Tonfon Mobile you can check your account balance 24 hours a day by simply ringing 875-2222. This function allows all Tonfon users to know their balances anytime, anywhere. Call Divert, Call Waiting Text Messaging Call Rates.

Tonfon Mobile Services rates:

TYPE OF CALL	$ PRICE (PER MINUTE)
Domestic	0.10
International	0.70

Tonfon's International Calling Card

Tonfon International Calling Cards enables customers to make calls from New Zealand, Australia and the USA to families and friends in Tonga.

Cost Savings

Calls from the USA to TONGA are as cheap as $0.25 cents per minute, any time of the day.

- Calls from AUSTRALIA and NEW ZEALAND are $0.65 cents per minute, any time of the day.

International Calling Cards denominations are as follows:					
Australia		New Zealand		USA	
$	10.00	$	10.00	$	10.00
$	20.00	$	20.00	$	20.00
$	50.00	$	50.00	$	50.00

International Telephone Calls

(Rate based on 60 seconds per timing block)

SERVICES/FROM TONGA	TO	PEAK TIME	OFF-PEAK TIME
International Subscriber Dialing (ISD), U-Call and Pre-paid Card Services	USA, Australia, NZ and Pacific Islands (Band 1)	$0.80 per minute	$0.75 per minute
	Asia/Europe and rest of the World (Band 2)	$1.00 per minute	$0.80 per minute

(Off peak time for international calls - 2300 hrs until 0800 hrs next morning every day)

TCC's Local and National Network Calls

FROM	TO	PEAK TIME	OFF-PEAK TIME
TCC Fixed Line	TCC Fixed Line Local	$0.06	$0.04
TCC Fixed Line	TCC Fixed Line National	$0.26	$0.24
TCC Fixed Line	U-Call (Local)	$0.18	$0.15
TCC Fixed Line	U-Call (National)	$0.38	$0.35
TCC Fixed Line	TonFon Cellular Ntwork (Local)	$0.18	$0.15
TCC Fixed Line	TonFon Cellular Ntwork (National)	$0.38	$0.35
TCC Pre-Paid Card	TCC Fixed Line (Local)	$0.07	$0.05
TCC Pre-Paid Card	TCC Fixed Line (National)	$0.30	$0.25
TCC Pre-Paid Card	U-Call (Local)	$0.25	$0.20
TCC Pre-Paid Card	U-Call (National)	$0.45	$0.40
TCC Pre-Paid Card	Tonfon Cellular Network (Local)	$0.25	$0.20
TCC Pre-Paid Card	Tonfon Cellular Ntwork (National)	$0.45	$0.40
TCC U-Call Cellular	Fixed Line (Local)	$0.18	$0.15
TCC U-Call Cellular	Fixed Line (National)	$0.38	$0.35
TCC U-Call Cellular	U-Call (Local)	$0.18	$0.15
TCC U-Call Cellular	U-Call (National)	$0.38	$0.35
TCC U-Call Cellular	Tonfon Cellular Network (Local)	$0.18	$0.15
TCC U-Call Cellular	Tonfon Cellular Ntwork (National)	$0.38	$0.35
TCC Fixed Wireless Network	Fixed Line (Local)	$0.06	$0.04
TCC Fixed Wireless Network	Fixed Line (National)	$0.26	$0.24
TCC Fixed Wireless Network	U-Call (Local)	$0.18	$0.15
TCC Fixed Wireless Network	U-Call (National)	$0.38	$0.35
TCC Fixed Wireless Network	Tofon Cellular Network (Local)	$0.18	$0.15
TCC Fixed Wireless Network	Tonfon Cellualr Ntwork (National)	$0.38	$0.35

(Off Peak Time for local and National calls - 1901 hrs – 0700 hrs the next morning everyday.)

Internet Plans and Competition

Kalianet provides two plans for the dialup customers as shown below. For a new account a

setup fee of $30 must be paid plus your chosen plan.

Unlimited Access Plan:

- $40/Calender Month. You will be given an Internet connection and a Kalianet Email address.
- This plan is suitable for Internet access. You can use the Internet/email for as long as you like for that paid month.

Limited Access Plan:

- $20/2hours/Month. Access usage over 2hrs will be charged for $10/hr. You will be given an Internet connection and a Kalianet email address.
- This plan is suitable for email use.

The Tonga experience with deregulation clearly demonstrates that substantial economic benefits can be gained from introducing competition into the telecommunications market of a small Pacific Islands country. The same type of economics benefits for consumers could also be achieved in other Pacific Island countries if they take the necessary steps to open their markets to competition.

B. Samoa Case Study

Samoa has been selected as a case study because it has commenced the process of liberalisation. Table 5 shows that Samoa had 13,278 fixed-line telephone customers in 2003 and an annual revenue of US$15.3 million. In Samoa, the introduction of competing ISPs in 2003, resulted in a price reduction of 50% in the incumbent ISP and an increase in Internet traffic of over 100%.

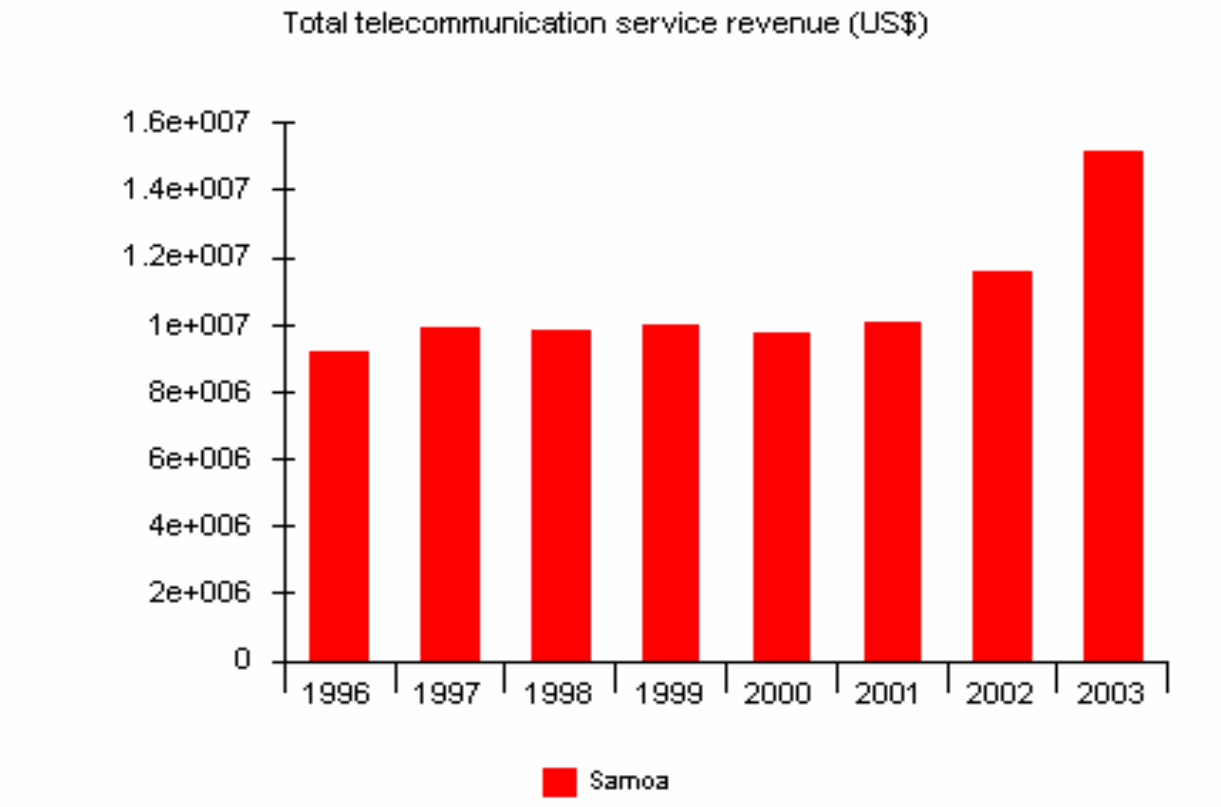
1. Internet Competition

ICT development in Samoa is growing. There are currently 3 Internet Service Providers in Samoa and all are located in Apia. The Ministry of Communications and Information Technology, recently granted approval for a further ISP to be established in Savaii, to serve the limited, although growing, customers of the island. The total of Internet cafes has also increased over the last year. Notwithstanding the fact that these facilities tend to be concentrated around the urban area of Apia, there is indication that the public now not only has better access to, but a wider choice of which Internet/email services to use. With the World Bank reform project underway and the commitment of the present Government towards strengthening and improving the telecommunications sector.

Table 5: Samoan Telecommunications Data

SAMOA	2000	2001	2002	2003
Total telecommunication service revenue (US$)	9726444	10057471	11568047	15151515
Cellular - cost of 3 minute local call (peak) (US$)	..	0.258621	0.266272	..
Cellular mobile telephone subscribers (Total)	2500	2500	2700	10500
Cost of a local 3 minute call (peak rate) (US$)	0.033435	0.031609	0.032544	0.037037
International outgoing telephone traffic (minutes)	12000000	13745617	7297975	7430381
International incoming telephone traffic (minutes)	..	12907841	19030486	19708750
Internet subscribers	300	1000	1320	..
Internet users per 100 inhabitants	0.565457	1.679731	2.217295	..
Main telephone lines in operation	8520	9670	11786	13287
Main telephone lines per 100 inhabitants	4.817697	5.414334	6.533259	7.292255
Annual investment for telephone service (US$)	..	..	3488166	3367003
Business telephone connection charge (US$)	25.83587	24.42529	25.14793	28.61953
Business telephone monthly subscription (US$)	3.039514	4.310345	4.43787	5.050505
Cellular connection charge (US$)	37.99392	35.91954	36.98225	..
Cellular monthly subscription (US$)	9.118541	8.620689	8.87574	..
Number of local telephone (minutes)	..	..	7149346	8200856
Residential monthly telephone subscription (US$)	4.55927	2.873563	2.95858	3.367003
Residential telephone connection charge (US$)	18.23708	17.24138	17.75148	20.20202

Source: International Telecommunications Union (ITU) Database (http://www.itu.int).



Source: International Telecommunications Union (ITU) Database (http://www.itu.int).

Country Profile

Capital	Apia	**Waiting List for Telephone Lines**	5,100
Area	2,934 sq. m.		
Population	176,848	**Cellular Subscribers**	8,513
		Prepaid	6,036
Currency	Tala	**Post-paid**	2,477
		Internet Subscribers	3,000 approx.
Urban Population	20%		
		Total International Outgoing Traffic	17,985,926 minutes
GDP	ST$733 million		
		Total International Incoming Traffic	17,924,958 minutes
GDP per Capita	ST$5,406		
		Network Digitisation:	
Telephone Density:		**Switching**	100%
Overall	7.8	**Transmission**	All international circuits
Rural	2.2		All Inter-Exchange links
Main Telephone lines:			
Urban	10,039		
Rural	3,896		

Government Department Responsible for Telecommunications

Ministry	Ministry of Communications and Information Technology
Address	1st Floor, CA & CT Plaza Savalalo, Private Bag, Apia, SAMOA
Telephone	(+685) 24 117
Facsimile	(+685) 24 671
E-mail	palu@samoa.ws
Minister	Hon Palusalue Faapo II

Source: APT Yearbook 2004 SAMOA.

In Samoa, mobile technology has been effective in helping the incumbent operator, SamoaTel, meet its universal service obligation. SamoaTel may not provide mobile services, (an exclusive license has been awarded to Telecom Samoa Cellular), but the company has used GSM technology to create wireless local loop networks in remote villages. People are able to use wireless handsets to make calls from within the village, but the handsets will not work outside of the village. Although the use of this technology is currently being disputed by Telecom Samoa Cellular, which believes this to be a contravention of its exclusive license, it has proved to be a cost effective way of extending basic services to these communities.

The Samoa case clearly demonstrates that even in small island countries, the introduction of competition between Internet service providers can result is significant economic benefits to consumers.

C. New Zealand Case Study

New Zealand's (NZ) experience with liberalisation provides solid evidence of the substantial benefits to be gained from competition. The information in this case study is taken from the website of the NZ Ministry for Economic Development.

“Up until 1988 the New Zealand Post Office had a statutory monopoly in the provision of public telecommunications services in New Zealand. The New Zealand Government comprehensively reformed the telecommunications regulatory environment over the period 1987-89. The aim of the reform was to improve the industry's economic performance and increase consumer benefits by creating competitive, open entry telecommunications markets supported by general competition law.

On 1 April 1987 a new State-owned Enterprise (SOE), Telecom Corporation of New Zealand Ltd was formed, by the separation of the telecommunications element of the Post Office from its postal and banking arms. The regulatory and policy advice functions of the former Post Office were transferred to the Department of Trade & Industry (now the Ministry of Commerce). Between 1 October 1987 and 1 April 1989 the supply of customer premises equipment was progressively deregulated. On 1 April 1989, all legal restrictions on telecommunications services market entry were removed. Telecom was privatised in September 1990, and competition in telecommunications services developed from 1991 with the signing of the first interconnection agreement.

Key benefits of telecommunications deregulation have been:

- Substantial price reductions for telecommunications consumers;
- Improved service availability, in terms of access to new services, fault service response, and new service installation times;
- Ongoing investment in the New Zealand telecommunications market. Particularly from BCL, Clear, Global One, Saturn, TeamTalk, Telecom NZ, Telstra NZ, Vodafone (formerly BellSouth NZ) and WorldxChange;
- The development of competition in the provision of leased circuits and data services, cellular service, long distance calls and freephone service;
- The development of competition for business telephone services in metropolitan business centres and in 1998 for residential telephone service in the Wellington area.

In the late 1970s and early 1980s New Zealand's economic performance declined significantly. A significant period of economic reform followed focusing on the removal of protection and the development of competitive markets. As part of this reform process in the 1980s, it was clear that export diversification and import substitution alone would not be enough to restore the New Zealand economy to its former strength. In particular, it was recognised that the so-called non-(internationally) traded goods sector, was not subject to significant economic pressures to perform. A number of studies highlighted the need for improved efficiency in such areas to assist economic recovery.

The New Zealand Post Office was a key public enterprise in the mid 1980s and included telecommunications, banking and postal operations. In 1984, it was New Zealand's largest single employer, with 41,000 staff. A review in 1985 (the Mason/Morris report) highlighted the inadequacies of the existing organisational structure, recommending that the Post Office be re-organised into specific business units. In the telecommunications area, opening up enhanced services and the customer premises equipment markets to competition were recommended.

Telecom commenced business as a separate corporation on 1 April 1987 with 26,500 staff. Regulatory and policy advice functions and management of the radio frequency spectrum were transferred to the Department of Trade & Industry (now the Ministry of Commerce).

In 1987, the Touche Ross report, commissioned by the Government, identified a need for considerable improvement in Telecom's operations. For example, the report highlighted that the corporation was engineering rather than market-driven, did not achieve a level of efficiency comparable to the best practice of overseas telephone companies, and Telecom's management systems were inadequate.

The report identified large cross-subsidies between long distance call charges and access (i.e. line rental) charges, meaning that price reductions for toll call services could increase local access charges substantially.

The report concluded that competition in network services was sustainable, provided satisfactory interconnection arrangements could be made. In July 1989, the Chairman of Telecom gave an undertaking that Telecom would ensure that interconnection would be provided to competitors on a fair and reasonable basis.

In September 1990, the Government sold Telecom to a consortium led by Ameritech of Chicago and Bell Atlantic of Philadelphia for New Zealand dollars (NZ$)4.25 billion. The proceeds were used to retire public debt.

Since the telecommunications sector was liberalised, successive governments have taken the view that a market-driven, light-handed telecommunications regulatory framework is an effective means of achieving consumer benefits and efficient economic outcomes.

To maintain conditions of effective competition, the Government placed primary reliance on general competition law, the Commerce Act 1986, in particular those parts of the legislation which deal with misuse of a dominant position in the market and prohibition of business acquisitions which create or strengthen market dominance.

Government policy statements on telecommunications competition have spelt out the general policy, along with a reserved position that, if it proves to be necessary the Government would consider the introduction of other statutory measures or regulation.

Consumers' rights in the supply of telecommunications services are covered by the Fair Trading Act 1986, which prohibits certain conduct and practices in trade and provides for the disclosure of consumer information relating to the supply of goods and services."

Source New Zealand Ministry of Economic Development website.

TELECOM'S RESPONSE TO THE COMMERCE COMMISSION'S ISSUES PAPER 30 MAY 2003 [PUBLIC VERSION]

Internet and Broadband Infrastructures in New Zealand

Dial-Up Internet infrastructures

203. New Zealand has a record of being one of the heaviest-investing countries in Information Communications technologies ("**ICTs**") in the OECD. From 1996 onwards, New Zealand has recorded the highest percentage of GDP spent on ICTs in the OECD.[22] This high relative spend is reflected in very high levels of investment in all technologies. Much of this investment is evident in the current state of the telecommunications infrastructure relative to other OECD countries. In 1993, New Zealand with 95% led the OECD in the proportion of the fixed telephony network comprised of digital lines.[23] New Zealand became the fourth country in the OECD to have a fully digital network (after France, Luxembourg and Iceland) in 1997. Australia did not reach this milestone until 1999, at which stage the US level had reached only 94%.[24] The current high quality levels and wide availability of dial-up and broadband telecommunications networks in New Zealand are a reflection of the levels of investment that have occurred. Whilst it is acknowledged that service quality and availability are in some instances restricted by geographical factors, given New Zealand's challenging topography and its low population density relative to many other OECD countries,[25] New Zealanders on average have access to state-of-the-art telecommunications infrastructure.

204. New Zealand was one of the earliest OECD countries to have widespread commercial access to the Internet. Academic access to NZGate commenced in 1989 and became fully commercially available in 1992.[26] A highly competitive ISP market emerged. This led to an early adoption of dial-up access by both commercial and residential users.[27] In

[22] OECD Science and Technology database.

[23] This compares to Australia with 40%, the UK 75% and the US 85% at the same date.

[24] OECD 2001a, *Communications Outlook*, Paris, Organisation for Economic Co-operation and Development Information Society, <http://www.oecd.org>.

[25] Alger, Dan, and Leung, Joanne, *The Relative Costs of Local Telephony Across Five Countries*, ISCR Research Paper, 1999, <http://www.iscr.org.nz/research/>.

[26] Brownlee, Nevil, 1997, *Internet Pricing in Practice*, in McKnight, Lee W.; and Bailey, Joseph P. (eds), *Internet Economics* (Cambridge, Massachusetts: Massachusetts Institute of Technology).

[27] Enright, Christina, *Strategic Behaviour of Internet Service Providers in New Zealand*, Wellington: ISCR, 2000, <http://www.iscr.org.nz/research/>.

Table 6: New Zealand Telecommunications Data

NEW ZEALAND	2000	2001	2002	2003
Total telecommunication service revenue (US$)	1.8E+09	1.75E+09	1.99E+09	3.16E+09
Cellular - cost of 3 minute local call (off-peak) (US$)	0.272727	0.617647	0.680556	0.854651
Cellular - cost of 3 minute local call (peak) (US$)	2.454545	1.62605	1.791667	2.25
Cellular mobile telephone subscribers (Total)	1542000	2288000	2449000	2599000
Cost of a local 3 minute call (off-peak rate) (US$)	..	..	..	..
Cost of a local 3 minute call (peak rate) (US$)	0	0	0	0
Coverage of population (%)	97	97	97	98
International outgoing telephone traffic (minutes)	8.15E+08	6.28E+08	6.24E+08	5.62E+08
International incoming telephone traffic (minutes)	6.11E+08	6.92E+08	9.14E+08	8.29E+08
Internet subscribers	500000	660000	700000	781818
Internet users per 100 inhabitants	39.27109	45.40652	48.43746	52.62895
Main telephone lines in operation	1831000	1823000	1765000	1798000
Main telephone lines per 100 inhabitants	47.46228	46.97848	44.80719	44.84685
Mobile communication revenue (US$)	4.91E+08	5.9E+08	7.06E+08	9.53E+08

Source: International Telecommunications Union (ITU) Database (http://www.itu.int).

D. Eastern Caribbean Case Study

The experience of the Eastern Caribbean states (ECS) (Commonwealth of Dominica, Grenada, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines) provides a very relevant case study for the PICs. In the early 1990s the Eastern Caribbean states were in a similar situation to the Pacific Islands today. At the time, the provision of telecommunications services was undertaken by Cable and Wireless that had a monopoly with an exclusive licence in each country. The ECS governments realised the importance on efficient and cost effective telecommunications and the likely impact that liberalization would have on lowering telecommunications tariff levels and improving the quality of services. They also were aware that to gain the most out of telecommunications deregulation they would have to work together as a group of countries under a regional organisation. In May 2000 they formed the Eastern Caribbean Telecommunications Authority (ECTEL).

> "As the first regional telecommunications authority in the world it is designed to promote liberalization and fair competition, harmonization of regulations and policies across member states, universal service, fair pricing, access to advanced services, and overall sector development."
>
> Source: World Bank – Report on Diagnostic Review October 2001,Meritec Limited 40

The Pacific Island countries should consider the benefits from adopting a similar regional approach to telecommunications liberalisation.

The World Bank provides support to ECTEL. Although the member countries will retain their sovereign power over licensing and regulation, ECTEL will provide technical expertise, advice and support for the creation of coordinated national regulations at the country level. It will promote the introduction and development of harmonized, transparent and objective regulation of telecommunications in the region, working in tandem with new telecommunications bills that will establish a National Telecommunications Commission as the regulatory mechanism for each country.

ECTEL's powers and responsibilities under the treaty include:

- Advising and coordinating with the contracting states and with other states and international bodies regarding telecommunications;

- Recommending regional policies on issues including universal service, interconnection, numbering and pricing, forms and areas of licensing and frequency authorization, methods of standardizing applications procedures, cost-based pricing regimes;
- Recommending license terms and conditions, systems of frequency authorization management, license fee structures, technical standards and procedures for approval of equipment, management systems for and operation of universal service funds;
- . Designing and operating open tender proceedings for individual licenses;
- Reviewing all individual license applications made in contracting states;
- Maintaining a harmonized regional radio spectrum plan and managing radio spectrum and frequency authorization;
- Mediating or issuing opinions on disputes between licensees; and
- Monitoring, in collaboration with states, the effectiveness of the service"

Source: World Bank – Report on Diagnostic Review October 2001; Meritec Limited 40

1. Eastern Caribbean Telecommunications Authority (www.ectel.int)

The paragraphs below contain information from the Eastern Caribbean Telecommunications Authority (ECTEL) website:

"ECTEL - The Eastern Caribbean Telecommunications Authority was established by the Governments of five Eastern Caribbean states to promote market liberalization and competition in telecommunications of the contracting states.

ECTEL is regional agency that provides advice and makes recommendations on telecommunications matters and helps to manage the sector in its member states. The organization's headquarters is located in Castries, Saint Lucia.

It is supported at the national level in each member state by a National Telecommunications Regulatory Commission (NTRC) that interfaces with users and providers and helps to manage the licensing process.

Its website provides a useful resource for understanding the structure, management and operations of the telecommunications in the ECTEL Member States. Its pages contain links to the NTRCs, copies of legislation and regulations governing the sector, procedures and guidelines for applications and licensing, information on spectrum management and numbering, and answers to frequently asked questions.

In the 1990s the countries of the Organisation of Eastern Caribbean States (OECS) were not earning as much as they needed from their traditional sources of revenue –agricultural exports, light manufacturing and, to a lesser extent, tourism. They needed to diversify their economies into areas that were compatible with their resource base, while at the same time not heavily dependent on subsidies or preferential market access. A natural choice was to expand trade in services, including tourism, telecommunications and entertainment, which at the time were the fastest growing industries worldwide and which promised even better growth in the future. However, the governments realised that there were several factors inhibiting the growth of the service sector in the islands and many of these were linked to telecommunications – limited access to infrastructure, high costs of telecommunications services and a shortage of trained personnel in the field.

At that time, the provision of telecommunications services was the sole preserve of Cable & Wireless, which held exclusive licenses in all of the OECS. These licenses would expire at different times – as early as 2001 in St. Lucia, and as late as 2024 in St. Kitts and Nevis. Once they understood the economic potential of telecommunications and the benefits for their countries, the next step for the governments was getting sound advice on how to go about

changing the environment in which the leading, and in most of the countries, sole provider of services operated. Licence agreements and telecommunications laws had to be changed and improved to enable the governments to achieve their goals, particularly that of opening up their respective sectors to new companies to compete with the existing company that had been operating alone for a very long time -- in some cases 125 years.

2. Preparing for Liberalisation

In preparation for liberalisation the five OECS states would obtain a loan of US$6 million from the World Bank (and chipped in with a further US$4 million of their own money) to pay for the expert advice and support services required to change the laws, licences, agreements and tariffs; organise discussions with individuals, groups and institutions that would be affected by the changes; and set up new bodies to regulate the new environment and ensure that one competing provider did not gain an unfair advantage over the other. That careful process of preparation became known as the OECS Telecommunications Reform Project (TRP) and it commenced in 1998.

Very early, the OECS governments knew that if they were to get the most out of telecommunications liberalization they would have to work together. At a meeting in Dominica on May 28, 1999, Ministers Responsible for Telecommunications approved a policy document promising that, “they (member countries) will cooperate and work together on a regional basis to achieve the aims.” One of the issues common to the member countries was getting the appropriate regulation right, so that old and new investors in the sector would not be in a position to take advantage of the governments (by playing one against the other),

the customers would not have to experience high prices and poor service, and that companies would not deliberately depress tariffs and prices to ruin each other (anti-competition). Therefore, the Ministers also agreed that, “an independent regional regulatory body will be created to coordinate, advise and harmonise broad policy directives for the region, which will then be implemented by a regulatory unit in each member country.”

The regional body envisaged by the governments came to be known as ECTEL, established by a treaty on May 4, 2000. One can say that the process of telecommunications liberalisation in the OECS began with the establishment of ECTEL, which ended the (TRP). ECTEL gave a formal structure to the process, led by the Council of Ministers and advised by a Board of Directors. The Treaty binds “contracting states” together through a regulatory body that advises on broad issues, such as licence application and tender procedures, setting of fees, tariffs, assessment of technical matters, and mediation of disputes. The liberalisation model chosen by the OECS has assured the participation of all stakeholders – politicians, dominant company, policy-makers, new investors and the public. Consultation and negotiation have lessened the use of courts-of-law, which can be very costly in terms of time and money, in the settlement of disputes over licences and regulation.”

Source: Eastern Caribbean Telecommunications Authority website www.ectel.int

IV. COST/BENEFIT ASSESSMENT OF TELECOMS LIBERALIZATION FOR FICS

A. Quantifying the Economic Benefits to Consumers

This study applies a cost benefit analysis approach to identify the economic impacts of the introduction of competition in the telecommunication markets of FICs. Our approach involves assessing the likely impact of competition on the telecommunications market in each FIC. The analysis is based on two scenarios. The first scenario assumes that the telecommunications markets remain as a monopoly with the current tariff structure prevailing over the next five

years. The second scenario assumes that the markets have been opened up and new competitors have rapidly entered the market and engaged in strong price competition with the former monopoly provider. Based on the case studies reviewed in section III of this report, we predict that the international telephone call charges will fall by 50% and international mobile charges will also fall by 50%.

The benefits to consumers come from the lower call charges for each call that they make. If call charges drop by 50% then the consumer has saved 50% on making each telephone call. This is a real economic benefit to the consumer and can be measured in dollar terms. Following a reduction in call charges, consumers will be motivated to spend more time on calls and to make more calls now that they are cheaper. Economists have developed a method of measuring in dollar terms the economic benefits that result from a decline in the price of telephone calls. The measure is called consumer surplus and the amount of consumer surplus is affected by the responsiveness of consumers to price changes called the price elasticity of demand. The main economic benefit to consumers from deregulation is the consumer surplus they would receive from tariff reductions for international calls. Our analysis assumes that competition would lead to an average of 50% reduction in all international ICT activities in all countries except Tonga and Samoa. In Samoa, the partly deregulated ICT market has already had a positive impact. In Samoa the introduction of competition between the three competing Internet service providers resulted in a price reduction of 50% by the incumbent ISP and an increase of over 100% in Internet usage. We predict the international ICT charges would decline by a further 20% in Samoa compared to 50% in the other FICs.

1. Method of Calculating Benefits to Consumers from Deregulation

The following eight steps or procedures were applied to calculate the economic benefits to consumers:

1. Step 1 involves developing two scenarios.

   Scenario No1 assumes the telecommunication markets remain in the current monopoly status.

   Scenario No 2 Assumes the markets are fully deregulated. The assumptions of each scenario are specified and defined.

2. Step 2 involves extracting data from the International Telecommunication Union and annual reports of telecoms on total telecommunications revenue, convert it to United States dollars and in some cases make estimates based on projections from historical trends to bring the data to the year 2004. Table 7 below shows the total telecommunications revenue for each FIC. Where data was not complete the consultant made a forecast based on earlier year's data and supplemented by information contained the annual reports of the telecoms in Fiji Islands and Solomon Islands.

Table 7: Total Telecommunications Revenue
(US$ millions)

TOTAL TELECOMMUNICATION SERVICE REVENUE	1999	2000	2001	2002	2003	2004
Fiji Islands	70.05	87.56	88.16	104.00	116.23	120.70
Kiribati	4.91	4.28	4.15	4.20	4.30	4.40
Marshall Islands	5.60	6.10	5.97	6.66	6.40	6.60
Micronesia (Fed. States of)	10.60	10.95	11.00	12.00	11.00	12.00
Nauru	..	..	..	..	..	1.50
Palau	..	..	..	..	..	8.01
Papua New Guinea	72.98	79.15	..87.01	95.77	105.34	115.88
Samoa	9.97	9.73	10.06	11.57	15.15	16.00
Solomon Islands	14.05	11.99	12.09	..	8.34	11.57
Tonga	4.32	4.73	5.20	5.72	6.20	6.92
Tuvalu	1.17	1.12	1.20	*..1.30*	*1.40*	1.50
Vanuatu	11.82	11.79	12.24	*12.74*	*13.24*	*13.74*

Source: International Telecommunications Union (ITU) Database (http://www.itu.int) and consultant estimates.

3. The third step involves estimating the amount consumers spent in 2004 on international fixed line and mobile telephone calls and Internet expenses. Because no data is available from each individual country, it was necessary to make an estimate of the likely level of international revenue for each country based on the Fiji Islands ratio of international revenue to total telecommunications revenue. More publicly available financial data is available about the Fiji Islands telecommunications market than other FICs. It is contained in the annual reports of Amalgamated Telecom Holdings Limited (ATH), a publicly listed company on the South Pacific Stock Exchange and in the annual reports of FINTEL. The Fiji Islands ratio of 29% was applied to other countries to derive an estimate of consumer spending on international telecommunications services. Estimating the amount of consumer spending on international telecommunications is also made complex by the systems used by telecoms for sharing revenue for incoming and outgoing telephone calls by sending and receiving telecoms. In all FIC s, the number and volume of incoming international telephone calls greatly exceeds the number and volume (measured in minutes) of outgoing calls. In most FICs international incoming traffic is more than double international outgoing traffic. The telecoms earn considerable fees from incoming traffic although the amount of income derived from outgoing traffic exceeds that derived from incoming traffic. The difference between outgoing and incoming telephone traffic is illustrated for Fiji Islands and the Solomon Islands in the Tables 8 and 9 below.

Table 8: Fiji Islands, Outgoing and Incoming Telephone Traffic
(minutes)

FIJI ISLANDS	2000	2001	2002
International outgoing telephone traffic	15025000	19700000	23165038
International incoming telephone traffic	40385000	57000000	67959344

Table 9: Solomon Islands, Outgoing and Incoming Telephone Traffic
(minutes)

SOLOMON ISLANDS	1999	2000	2001
International outgoing telephone traffic	1912000	2996647	5907270
International incoming telephone traffic	3646556	6648912	..

In the case of Fiji Islands, our calculation of the consumer surplus is based on the tariffs that prevailed in January 2005 before the announced tariff rebalancing exercise that is being contested in the courts by FINTEL. Our estimate of the consumer surplus is close to the consumer surplus that will result from the full implementation of the new Commerce Commission Tariffs (see Appendix 4). In Fiji Islands the international calls reduction recommended by the Commerce Commission will reduce international tariffs by an average of 55% compared to the 50% that we apply in our analysis. The Commerce Commissions 55% reduction of international calls was recommended after extensive study and it supports to 50% figure that we have applied to FICs in this study.

Table 10: Total Telecommunications Service Revenue

TOTAL TELECOMMUNICATION SERVICE REVENUE (US$ MILLIONS)	2003	2004	INTERNATIONAL EXPENDITURE	CONSUMER'S SURPLUS
Fiji Islands	116.23	120.70	35.00	26.25
Kiribati	4.30	4.40	1.27	0.95
Marshall Islands	6.40	6.60	1.91	1.43
Micronesia (Fed. States of)	11.00	12.00	3.48	2.61
Nauru		1.50	0.43	0.32
Palau		8.01	2.32	1.74
Papua New Guinea	105.34	115.88	33.60	25.20
Samoa	15.15	16.00	4.64	1.39
Solomon Islands	8.34	11.57	3.35	2.51
Tonga	6.20	6.92	2.00	0.00
Tuvalu	1.40	1.50	0.43	0.32
Vanuatu	13.24	*13.74*	3.98	2.98

4. Step 4 involves calculating the likely impact of competition on tariff level reduction. This study estimates that cost of international telephone calls is likely to decline by at least 50%. This estimate is based on the experience of Samoa and Tonga. It is also based on the fact that all FICs telecoms charges for international calls are high by international standards. The only exception is Tonga where the cost of international calls is now equivalent to comparator countries. This study expects the competition in international telecommunications in each of the Forum Island Countries will result in a sharp decline in tariffs as has occurred in the Kingdom of Tonga.

   It is important to note that our analysis assumes that all the new entrants to the national telecommunications market are required to make a contribution of 10% of their revenue to a government operated universal service fund.

5. Step five involves estimating the price elasticity of demand for international telecommunications. Once again the experience in Samoa has been used to estimate the price elasticity of demand. **Price elasticity of demand** is the degree of responsiveness of demand for a product or service due to a change in the price of that product. The price elasticity of demand can be elastic, inelastic or have unit elasticity. The total revenue received by the suppliers would remain unchanged if the elasticity of demand is unitary.

   Appendix 1 in this report contains a bibliography of research studies that have been published on the price elasticity of demand for telecommunication services. It is reproduced from an August 2003 report prepared for the New Zealand Commerce Commission entitled: ***Review of Price Elasticities of Demand for Fixed Line and Mobile Telecommunications Services***. This NZ report provides an excellent review of the research studies on price elasticity. Table 11 and 12 are reproduced from the NZ Commerce Commission report. Table 11 provides a summary of the range of price

elasticities for the different telecommunications services. It is interesting to note that for some services the range of elasticities is wide reflecting the different country demand factors. It shows international telephone call elasticities range from -0.3- to -1.54.

Table 12 is from the World Bank Telecommunications Regulatory Handbook (2000).

The World Bank developed these estimates of price elasticity of demand on the basis of Taylor's review of elasticity research studies (1980,1994) and other studies. The elasticity for international telephone calls of -0.9 (+ or – 0.30) is very close to the elasticity of unity that we used this study to calculate the consumer surplus.

There have been no published research studies on the price elasticity of demand for telecommunication services in the Pacific Islands. The Samoa case study shows that when Internet charges were reduced by 50% the usage doubled. This reflects a unitary price elasticity of demand. Total revenue to the providers would remain unchanged. In calculating the consumer surplus shown in Table 10, we have assumed a unitary level of price elasticity of demand for all international ICT expenditure by consumers, based on the World Bank Regulatory Handbook recommended elasticity and the Tonga and Samoa case studies information on price elasticity of demand discuss in section III.A. and III.B. We have calculated the consumer surplus resulting from a 50% reduction in international tariffs by applying the unitary price elasticity of demand to the price reduction.

Table 11: Summary of Results from Studies Reviewed[a]

PRICE ELASTICITY OF DEMAND	RANGE	
Fixed line connection charge	-0.02	-0.04
Fixed line monthly access charges[1]	-0.02	-0.10
Local calls[2]	-0.04	-0.11
Mobile subscriptions/access[3]	-0.06	-0.54
Mobile originated calls[4]	-0.09	-0.80
Fixed to Mobile	-0.11	-0.80
Mobile access and usage (combined)	-0.41	-0.80
Long distance national	-0.10	-1.55
Long distance international	-0.30	-1.54

[a] Generally excludes outliers and non-comparable studies
Source: NZ Commerce Commission Report: 2003.

Table12: Price Elasticity of Demand, World Bank Regulatory Handbook

TYPE OF DEMAND	CONNECTION	SUBSCRIPTION	LONG DISTANCE
Access	0.03(±0.01)	-0.10(±0.09)	
Local calls		-0.20(±0.05)	
Domestic long distance			
Shorter distance			-0.375(±0.125)
Medium distance			-0.65(±0.15)
Longer distance			-0.75(±0.20)
International Calls			-0.9(±0.30)

Source: World Bank Telecommunications Regulatory Handbook, 2000.

6. The sixth step involves calculating the increase in consumer surplus resulting from the 50% price reduction of international telecommunication services. **Consumer surplus** is defined as a difference between what a consumer is willing to pay for an additional unit of a good or service and the market price of the good. For the market as a whole, it is

the sum of all the individual consumer surpluses, or the area below the market demand curve and above the market price. The following example is used to illustrate the concept the consumer surplus. Assume the market price for an international telephone call is two dollars per minute and a consumer spends a thousand dollars per year on international telephone calls. Now we assume that the price of the international telephone calls declines from two dollars per minute to one dollar per minute. If the consumer spends the same amount of time as measured in minutes then the cost of making calls would reduce from one thousand dollars per year to five hundred dollars per year and the consumer would have save five hundred dollars. This is an economic benefit to the consumer. However, with the cheaper price for calls the consumer may decide to double the amount of time spent on international calls. The consumer in this case would spend the same amount on calls of one thousand dollars per year. The five hundred savings from the cheaper rate would be allocated by the consumer to making more calls. The consumer's expenditure on telephone calls would remain at one thousand dollars per year. The revenue going to the telecom from the cheaper prices would remain same but it would incur additional costs associated with the expansion in demand resulting from the 50% decline in the charge per minute. In this example the economic benefit to the consumer would be the five hundred dollars saved from the calls that he would have made at the higher price plus an additional two hundred and fifty dollars for the savings that the consumer makes on the additional calls. The value of the consumer surplus would be $750. The expenditure by the consumer would remain at $1000 per year. The consumer surplus is a measure of the economic benefit that the consumer receives. It is important to note the revenue ($1000) paid by the consumer to the telecom has not declined. Its costs however, would increase. In this situation, it is the marginal cost of providing expanded services that is relevant in undertaking any cost analysis of the impact on telecoms. Many of the costs of operating a telecom system are fixed costs that do not vary with the growth in output of services.

In calculating the consumer surplus in this study, the 50% reduction in price will result in a total consumer surplus of 75% of the total level of expenditure by consumers on international telecommunications.

7. This step involves aggregating the consumer surplus for each country to give a total consumer surplus for the pacific island countries. Also an estimate has been made of the present value of this level of consumer surplus for each country and for the region for a period of five years. The objective of giving this five-year figure is to give policy makers an indication of the magnitude of consumer benefits that could be achieved in the PICs by introducing competition and making markets contestable.
8. The final step is to undertake some sensitivity analysis on some of the key variables. A critical assumption in our analysis relates to the estimation of the total annual expenditure by residents and tourists on international telecommunications. In our first analysis we used 29% as the ratio of international expenditure by local residents. This is a conservative estimate based on Fiji Islands data. A second analysis is shown in Table 13 . This analysis is based on the assumption that consumer expenditure on international telecommunications accounts for 40% of total telecommunications revenue. In a World Bank study on Samoa, it was found that the total revenue from international operations was 65%-70% in year 1996, but this higher percentage is caused by the much higher level of incoming calls in relation to outgoing calls. An adjustment has to be made to the percentage to take this factor into account.

"Another aspect of the dependency on international settlements is evident in the proportion of total telecommunication revenues derived from the international segment. ***In 1996, some 65 to 70% of total telecommunication revenue was derived from the international segment of the business.*** *This high dependency on international revenue is due to a number of factors. First, the concentrated nature of the population and in-service lines in the capital, Apia, results in a limited amount of revenue being derived from domestic long distance service. Second, the low level of economic development results in a smaller portion of business customers and thereby lower fixed and usage revenue from the business segment. Third, the nature of the overall demographics, with some 100'000 Samoans residing outside the country, and retaining strong family ties with those residing in Samoa, coupled with both the relative difference in income levels and in outbound/inbound price differentials, produces substantial international calling on the inbound routes."*
Source: World Bank Samoa Telecommunications Project Appraisal Report , 1998.

The following quote from the World Bank Study reviews this issue.

> In most PIC, about 66% of the revenue from international calls comes from incoming calls and 34% from outgoing calls. Another complicating factor is that local consumers gain an economic benefit from receiving incoming calls. These calls are of value to them as illustrated by the fact that most consumers are often prepared to accept and pay for reverse charges calls because they value them. Cheaper incoming calls are a benefit to local residents and business firms. Overseas friends and family members residing in countries such as New Zealand and Australia are likely to call more frequently if the cost of incoming calls is reduced.

Table 13

TOTAL TELECOMMUNICATION, SERVICE REVENUE (US$ MILLIONS)	2003	2004	EXPENDITURE ON INTERNATIONAL CALLS, INTERNET	CONSUMER'S SURPLUS
Fiji Islands	116.23	120.70	48.28	36.21
Kiribati	4.30	4.40	1.76	1.32
Marshall Islands	6.40	6.60	2.64	1.98
Micronesia (Fed. States of)	11.00	12.00	4.80	3.60
Nauru	..	1.50	0.60	0.45
Palau	..	8.01	3.20	2.40
Papua New Guinea	105.34	115.88	46.35	34.76
Samoa # 20% price reduction	15.15	16.00	6.40	1.92
Solomon Islands	8.34	11.57	4.62	3.46
Tonga #Nil price reduction	6.20	6.92	00	00
Tuvalu	*1.40*	1.50	0.60	0.45
Vanuatu	*13.24*	*13.74*	5.49	4.11
Total consumer surplus				**90.66**

2. Price Regulation versus Competition

There is clear evidence that the Pacific telecoms have used their market power as monopolists to charge prices for international telephone calls in excess of the level that would prevail if the

markets were open for competition and the monopoly status was transformed into a competitive market status. The problems of monopoly have been recognised for many years and many governments around the world have attempted to apply price regulation to prevent monopolists from exploiting consumers. The Fiji Commerce Commission provides an interesting example of price regulation of the monopoly provision of services by Telecom Fiji, Vodaphone and FINTEL. Later in this report, the recent decision by the Commerce Commission to introduce a new structure of tariffs is discussed. It provides evidence of the degree to which Fiji Telecom's pricing structure required major rebalancing to reflect the costs associated with providing the different services. The Commerce Commission has recommended that the price of international calls be reduced by an average of 55%.

Other Pacific Island Countries could decide to implement a similar form of price control to bring down the cost to consumers of international phone calls.

3. Internal Competition versus External Competition

Competition in Pacific Island telecommunications markets can come from two sources. Firstly new firms could be allowed to establish business operations in the countries themselves. For example, setting up of a second mobile telephone service. This involves the firms' investing in infrastructure, gaining licenses, employing staff and paying local tax. The second form of competition is from outside the country. This form of competition is already present in most pacific island countries where consumers are using call back services or reverse charges calls. There has been a rapid increase in the number of firms offering call back services at much lower rates per minute for international calls. The local providers can also enter the pre-paid phone card market for international phone calls. For example, Tonfon has been very successful in selling telephone cards to Tongans resident in Australia and New Zealand. These overseas Tongans are able to call their family in Tonga using the Tonfon card and making considerable savings. Tonfon is making good revenue out of this telephone card system.

Competition from overseas call back services is deemed to be illegal in most pacific countries but few of them have made any effort to block or prevent the operation of call back service. Consumers can arrange a call back services via the Internet using a credit card to make payment. It may in fact prove very difficult for PICs to regulate the increasingly growing level of international calls using pre-paid phone cards.

Skype goes for the gold

Evan Hansen, Special to ZDNet
March 18, 2005
URL: http://www.zdnet.com.au/news/business/0,39023166,39185090,00.htm

Net phone phenomenon Skype is preparing to expand its menu of paid services, hastening efforts to evolve from a free provider of niche services into a profitable company that could give industry giants a run for their money.

The Luxembourg-based upstart has so far signed up 29 million registered users for its free Net phone calling software -- a unique version of voice over Internet Protocol, or VoIP -- making it one of the fastest-growing services on the Net. Now it's aiming to milk profits from the swelling ranks of freeloaders with paid services that promise to make its Net-only product significantly more useful to consumers -- and potentially more lethal to traditional phone providers.

Last July, Skype launched a paid service called SkypeOut that lets subscribers make calls from the Net to the traditional phone network. It has signed up 1 million customers so far, the company said last week.

Also last week, Skype quietly unveiled test versions of two new paid products -- voice mail and a service dubbed SkypeIn that lets subscribers obtain ordinary telephone numbers. SkypeIn represents a potential watershed, since it will enable Skype subscribers for the first time to receive incoming calls from the hundreds of millions of people who still use traditional phone services.

Finally, Skype is working with equipment makers to develop hardware that will connect conventional phones to its free software and paid services. German phone maker Siemens, for one, has already released a Skype adapter for cordless phones in Europe. New devices are expected soon in the US from companies including Vtech and iMate that will let people make Skype calls using an ordinary handset, rather than a PC.

Analysts said Skype's efforts to bridge the Net and the traditional phone network could pose a major headache for traditional phone companies and other VoIP upstarts alike -- if it can continue to undercut rivals on price.

"Skype is going from a glorified (instant messaging) client that led VoIP to something that has broader implications, especially when you can do things like get a phone number assigned," said Jupiter Research analyst Michael Gartenberg. "A lot depends on how lean they can keep it, and how low they can keep prices as they expand."

Skype and host of rivals are turning the telecom industry on its head using Internet technology to offer more calling features for less.

In this topsy-turvy world, Skype represents the competitive extreme, wielding a weapon that few others are willing or able to match: Using peer-to-peer architecture, it claims it can offer its software service for free to tens of millions of people, and still make boatloads of profits by upselling only a fraction of its users on premium services.

B. Short- to Medium-term Impact on Tariffs and Consumers

The Kingdom of Tonga provides a relevant case study of the likely impact of opening Pacific Island telecommunications markets to competition. Tonga has the lowest telecommunication charges and rates in the Pacific. Strong competition provided by the new entrant, Tonfon resulted in a 20% reduction in mobile telephone charge and a doubling of the number of subscribers. The Tonga case study clearly demonstrates the benefits to consumers. There is no third degree price discrimination in call charges. Residential and business consumers pay the same rate for calls. Competition has led to innovative new services being introduced. Tonfon now offers a wireless home phone and television broadcast services.

The economic and social benefits of telecommunications deregulation for the Pacific Islands are summarized as follows.

- International telephone call charges will decline rapidly to about 35 US cents per minute.
- Tariff rebalancing will lead to an increase in the cost of fixed line monthly rentals to about an average of US$10 per month.
- In most PICs, a second mobile operator will enter the market and drive mobile call charges down significantly to a similar level as now prevails in Tonga.
- The prepaid mobile phone markets will continue to grow rapidly stimulated by the significantly lower call charges. Based on current growth trends, the number of mobile phone subscribers will exceed the number of fixed line subscribers in most FICs in the next five years
- Total telecommunications expenditure by all consumer groups will continue to grow reflecting a positive price elasticity of demand for telecommunication services and an expansion of services to remote areas.
- International experience demonstrates that service quality will increase significantly and quality improvement will be the major benefit from deregulation as reported in New Zealand.
- Business international telecommunication costs will decline by as much as 50% or more in most PICs.
- Competition will accelerate the adoption of new technology and wireless services will grow faster than the expansion of fixed line services.
- Prepaid international call cards will be marketed by Pacific telecom operators to Pacific Islanders resident in Australia, New Zealand and USA.
- Pacific island telecoms will continue to face strong price competition from off-shore call back operators and Voice over Internet providers that are now used by Pacific Island clients even though these operations are deemed to be illegal in most PICs. Internet cafes are already offering very cheap voice over Internet international telephone calls.
- Competition will reduce the ability of national telecoms to cross subsidize the roll out of new connections to rural consumers located in areas that are uneconomic to service. Most countries will be required to establish universal service funds and require new operators to contribute to the funds.
- The main beneficiaries of deregulation will be urban consumers, private sector businesses, schools and hospitals and government departments and public utilities.
- Deregulation is unlikely to lead to a substantial reduction in the total number of employees in the telecom sectors. The telecom deregulation experience in Australia and New Zealand has shown that total employment has remained static in the years following deregulation. The number of employees in the formerly government owned monopoly reduced following deregulation however the number of staff employed by the new operators was about the same as the number no longer employed by the monopoly.

C. Fiji Islands

The year 2005 represents a major turning point in history of telecommunications in Fiji Islands. The newly established Commerce Commission which is responsible for regulating telecommunications industry has made a ruling on pricing of telecommunication services. The new pricing structure that comes into effect on the June 1st represents a major rebalancing of telecommunication tariffs (see appendix 4 for details of the tariffs). The major changes are a sharp increase in telephone line rentals which will particularly affect low income households who make a very small number of telephone calls as the line rental is a fixed monthly charge. Most consumers will benefit greatly from the new tariff structure. International telephone call charges will be reduced significantly. Fiji Telecom has estimated that the new tariff will reduce its profit by about $10 million per year. Fiji Telecom is already examining ways to reduce its operating costs. It has indicated that it aims to cut its labour force of 1500 workers by offering redundancy packages to 500 workers. The initial offer has been rejected by the trade union. Fiji Telecom is also aware that the reduced call charges may substantially expand the demand for services compensating for the reduction in call charge rate. How consumers respond to the lower charges depends on the price elasticity of demand for local, regional and international telephone calls. There is some evidence that demand is unitary and that the total revenue coming to the providers will remain about the same level as prices reduce. Consumers will spent telecom call savings on additional and longer calls.

Over the past three years, consumer groups have been pressuring the government to break the telecom government monopoly and to allow new firms to come into the market and to compete with Telecom. The comparatively high international call charges and Internet charges have attracted the attention of the media. This concern was constantly in the media especially when a foreign firm TELPAC attempted to enter market with a call back telephone service which substantially under cut the Telecom charges.

The telecommunications by market segment in 2002 was as follows:

Total Market Revenue = Fiji dollars (F$)227 million (US$104 million)

Telecom = 56%

FINTEL = 29%

Vodafone = 15%

Table 14 shows the ITU telecommunications data for Fiji Islands.

Table 14: Fiji Islands Telecommunications Data

	2000	2001	2002	2003
Total telecommunication service revenue (US$)	87558688	88157896	70776256	..
Cellular - cost of 3 minute local call (off-peak) (US$)	0.84507	0.289474	0.30137	..
Cellular - cost of 3 minute local call (peak) (US$)	0.84507	0.289474	0.30137	..
Cellular mobile telephone subscribers (Total)	55057	80933	89900	109882
Cost of a local 3 minute call (peak rate) (US$)	0.056338	0.052632	0.054795	0.063158
Coverage of population (%)	40	49.5	55	55
International outgoing telephone traffic (minutes)	15025000	19700000	23165038	..
International incoming telephone traffic (minutes)	40385000	57000000	67959344	..
Internet subscribers	3500	5500	7600	9000
Internet users per 100 inhabitants	1.48075	1.844111	6.100537	6.659829
Main telephone lines in operation	86400	92222	97515	102023
Main telephone lines per 100 inhabitants	10.6614	11.33784	11.89788	12.35374
Mobile communication revenue (US$)	12380115	16515480	24204392	..
Business telephone connection charge (US$)	134.2488	125.4167	130.5708	150.5
Business telephone monthly subscription (US$)	2.150235	1.824561	1.899543	2.189474
Cellular connection charge (US$)	51.64319	0	0	..
Cellular monthly subscription (US$)	20.65728	14.47368	15.06849	..
Main telephone lines in largest city	..	18000	..	..
Mobile communication investment (US$)	2796512	3600933	2239410	..
Number of national long distance telephone (minutes)	42470268	39500000	39500000	..
Number of local telephone (minutes)	2.58E+08	89300000	89300000	..
Residential monthly telephone subscription (US$)	1.464789	1.245614	1.296804	1.494737
Residential telephone connection charge (US$)	39.68075	37.07018	38.59361	45.5
Telephone faults per 100 main lines	135	117	9.25	..

Source: International Telecommunications Union (ITU) Database (http://www.itu.int).

1. FINTEL

Fiji International Telecommunications (FINTEL) was formed in December 1976 as the operator of all international services. It is 51% owned by the Government of Fiji and 49% owned by Cable and Wireless of the United Kingdom. FINTEL has an exclusive license for international services until 2014. FINTEL has been profitable organisation and it has strongly objected to the new pricing structure that has been set by the Commerce Commission for introduction of June 1st 2005. It lodged an appeal with the High Court. It argues that the decision is unfair as its business planning has been based on its license. FINTEL made a decision to invest millions in the Southern Cross cable which provides high speed fiber-optic broadband excess to Australia and United States via the under sea cable.

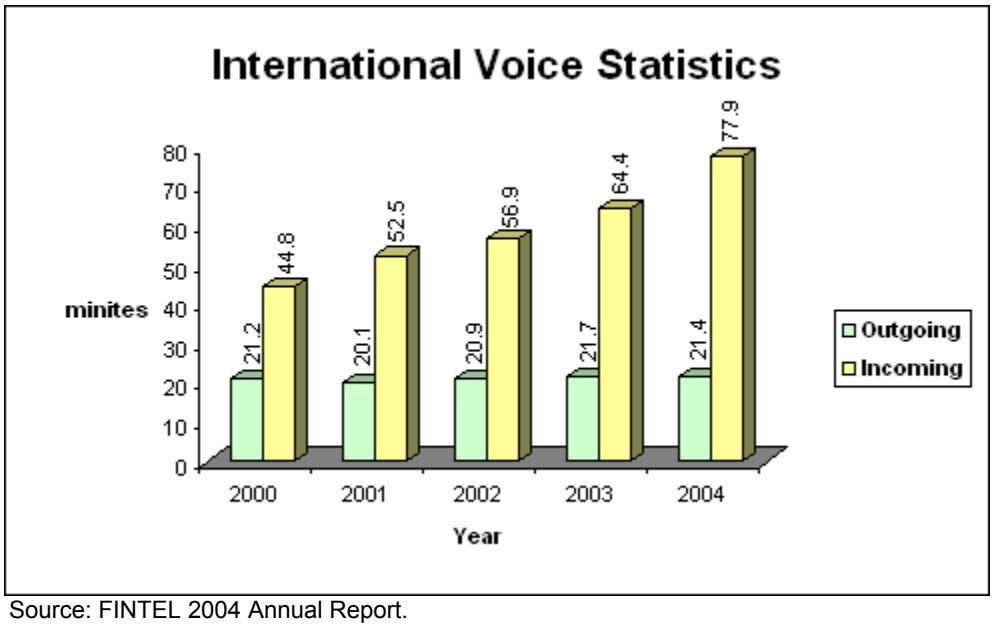
FINTEL has a revenue sharing agreement with Telecom Fiji for international calls. The charts that follow illustrate FINTEL International Voice Statistics, dividends per share, turnover and profit before taxation. They come from the annual report of FINTEL for 2004.

"FINTEL recorded a profit after tax of $12.9 million for the year ended 31 March 2004, a 5.1% decline when compared to 2003 year. The decline in financial results is directly attributed to reduced earnings from voice revenues largely due to bypass operation that continue to exist in the Fiji market.

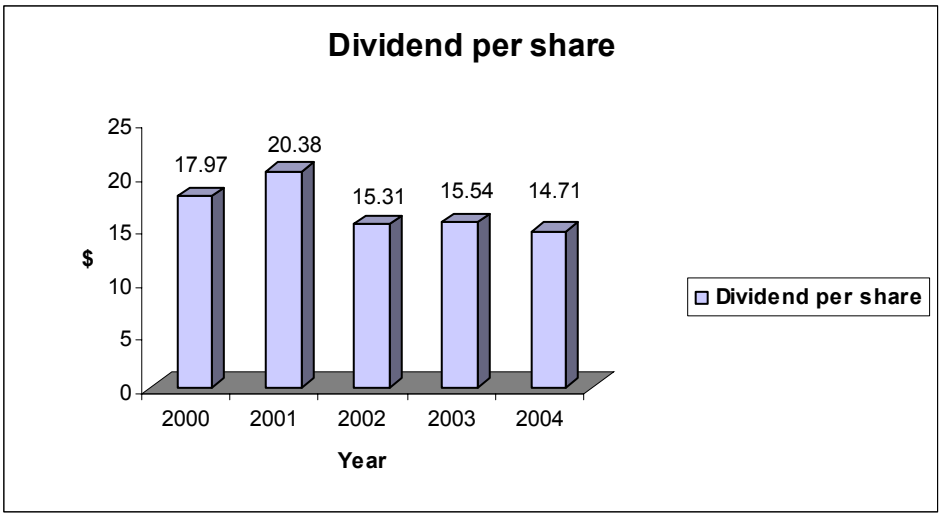
Total turnover for the year is reported at $50.1 million, compared to last year's $55.6 million. The $50.1 million turnover consists of $27.2 million earnings from international business relations, which accounted for 54.3% of the total turnover and the remaining $22.9 million (45.7% of the total turnover) represented earnings from the domestic market.

Voice service maintained its dominance as the premier revenue stream with a contribution of $45.3 million, or 90.4% of the overall earnings. However, earnings from voice service showed a decline of 11.2% and this is mainly attributed to reduced revenue collection due to the various factors and elements discussed above. The data leased services, comprising private leased circuits, frame relay, Internet and capacity leases collectively contributed $4.5 million or 9% to the overall earnings, a 3.5% increase from the previous year. This growth was achieved due to the increased demand for the bandwidth upgrade from existing customers and service implementation for some new customers that came on board during the year."

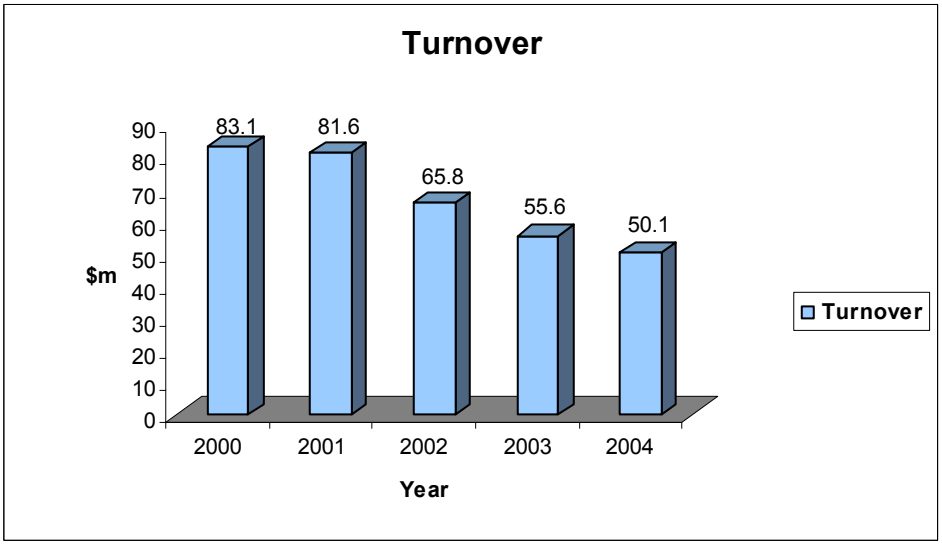
FINTEL Annual Report



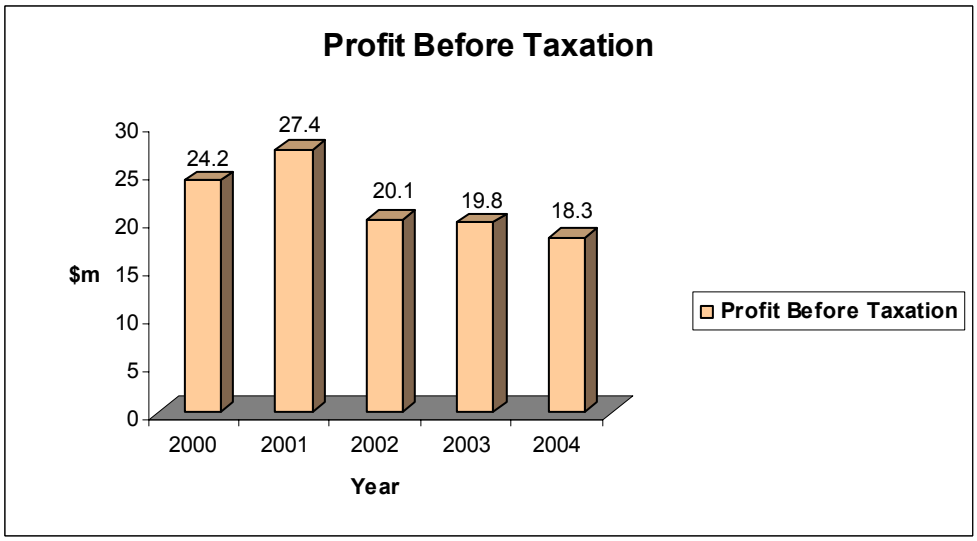
Source: FINTEL 2004 Annual Report.



Source: FINTEL 2004 Annual Report.



Source: FINTEL 2004 annual Report.



Source: FINTEL 2004 annual Report

2. Callback and Voice over Internet Calls

Fiji Island's high international call charges have made it a target for new technology ways of undertaking cheap telephone calls. Many urban consumers in Fiji Islands are now aware of the substantial savings to be made from using Internet telephony where calls to Europe can be as cheap as 4 cents a minute. This Voice over Internet approach is easy for consumers with Internet access to adopt. It involves purchasing of headset with microphones to attach to personal computers, making credit card payment to overseas based company operating in places like Australia, gaining an account number and with a pin number, making calls and drawing down account balance. The quality of the calls in terms of clarity is high because of the Southern Cross cable transmission. FINTEL is very aware that the consumers are bypassing its telephone system but regulators are not taking any action to stop consumers from using this Voice over Internet approach. It is deemed to be illegal to use voice over the Internet in Fiji Islands. These practices will continue to have a serious financial impact on FINTEL. The chart from FINTEL's 2004 annual report clearly illustrates the downward trend in its turnover.

It is claimed that the call back operator, TELPAC was offering calls at 44% less than the FINTEL rate. It was forced out of the market by Telecom Fiji.

3. Mobile Services by Vodafone

Vodafone Fiji is the only mobile service operator in Fiji Islands. The company is 49% owned by Vodafone, the UK international mobile operator and 51% by ATH. Vodafone Fiji launched its services in July 1994. The company had 104 staff in March 2003. Since 1999 Vodafone's mobile telephone subscribers have increased from 23,380 in 1999 to 109,882 in 2003. The mobile users of Fiji Islands have elected to use prepaid card services over the post paid approach with a total of 100,806 subscribers using the cellular prepaid system. Over the years 2000 to 2003 there was a very strong marketing campaign on the national television channel Fiji TV advertising mobile phones sold by the major retailers. As the result of the strong growth, the number of mobile phones now exceeds the number of fixed line telephones. In 2003 there were 102,023 line telephones compared to 109,882 mobile phones.

The ATH Annual Report for 2004 states that cellular mobile connections reached 113,719 in 2004, an increase of 25.3% from 2003. Vodafone also recorded a 21% increase in revenue and a 26% increase in net profit after tax in 2004. Its net profit after tax is reported to be $24 million.

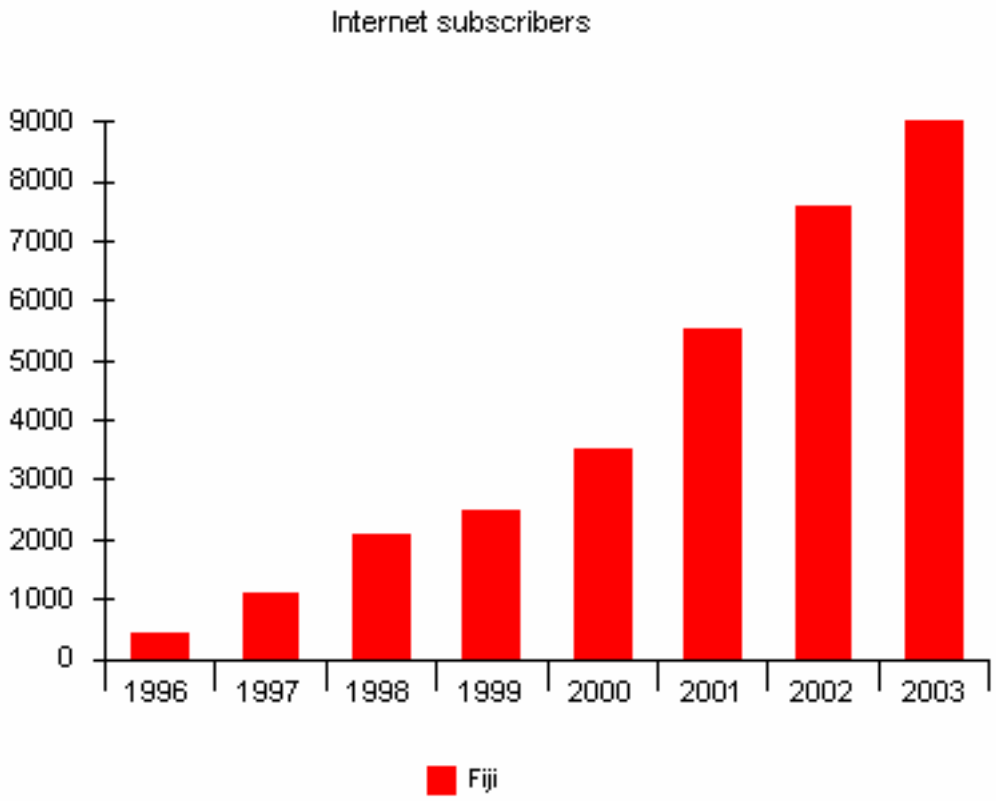
Prepaid voice calls provide the bulk of its revenue. However the 2004 Annual Report notes that there was a phenomenal 300% growth in Short Message Service (SMS) during 2004. In 2005 SMS cost the consumer 20 cents for each message. SMS can now be sent to over 200 countries in the network. (Source: Vadafone advertisement in the Fiji Times Sunday 26 June 2005).

International tourists are able to use their mobiles in Fiji Islands and international roaming accounts for 15% of revenues. Vodafone's rapid growth in Fiji Islands is an indication that consumers value its service and are willing to pay for calls at the current rates. The Vodafone off-peak rate and compares favourably with off-peak rates in other developed countries. If the market was open for competition it is likely that Vodafone would be involved in a price war with new entrant. It has a very dominant position in the market and has invested a lot of resources in developing its coverage in Fiji Islands. It is likely that any new entrants may find it difficult to compete with Vodafone given its market dominance and excellent international reputation. It is the second largest mobile company in the world and operates in many countries.

4. Internet

Internet services in Fiji Islands are provided by Connect, a subsidiary of Telecom Fiji which has

an exclusive license for domestic telecoms through to 2014. Connect has an arrangement for using Telecom Fiji's network. The government has issued eight Internet services provider licenses but none have commenced operations due to their difficulty in gaining a suitable arrangement with Telecom Fiji for using their network. In May 2005 a new company has indicated it is about to start a wireless Internet service bypassing Telecom Fiji's network. This service involves consumers buying a $500 modem and signing up to wireless broadband services for unlimited use at about $70 per month. This pricing structure is cheaper than Connect. Competition from this new firm is likely to drive down prices quickly. Most business firms will be strongly attracted to sign up to the new provider. The Connect service has been criticized by consumers for its pricing structure and the quality of the dial-up service. Connect has introduced a new broadband service in June 2005.



Source: International Telecommunications Union (ITU) Database (http://www.itu.int).

Commerce Commission Price Determination

The following quote is the press release by Joe Mar and James Raman on 22 April 2005. It contains information on the ATH assessment of the likely impacts of the new tariff structure onn ATH.

"*Telecom Fiji Limited has worked cooperatively with the Commerce Commission and we are*

pleased to have reached the present price determination.

We welcome the reduction in tariffs and we regard this as only the first step to bringing competitive prices to Fiji. The biggest winners out of this determination are the consumers of Fiji and they deserve it. Regional local calls will get decreases from 70% to 90%.

International calls reduction will reduce by an average of 55%. These will in fact bring down the cost of doing business in our country and therefore stimulate economic activity for the benefit of all.

We appreciate the work being done by the Commission as it is a very complex industry.

Although our initial analysis shows TFL may lose some $10M or more in earnings before tax we believe that the restructure and reforms currently being undertaken in TFL and the efficiency and productivity drive that is now taking place will help deliver savings to bridge some of these losses. We also believe that reduced tariffs will increase volume which will benefit the companies.

We will now move expeditiously to putting our systems in place to effect these changes by the first of June.

We are also pleased that the uncertainty surrounding the determination is now over and we can get on with the business of improving the network and our services for our customers.

One thing we assure the customers and the market that the new management in TFL is already looking to grow the business by offering new and innovative services and products to the market. For instance, two major innovations are currently being piloted and will be released as soon as possible."

22 April 2005 MEDIA RELEASE

Joe Mar, Managing Director TFL Group ,James Raman,Chairman, TFL Board of Directors

5. Impact of Deregulation on the Telecom Market in Fiji Islands

To a large extent the recent tariff rebalancing exercise undertaken by the Fiji Commerce Commission has simulated what would have occurred if the market had been open to competition. Clearly new competitors would have driven down the prices of international telephone calls by more than half. This is reflected in the decisions of the Commerce Commission to substantially reduce international telephone call charges by 55%. Clearly there is a long way to go with reducing international telephone call charges. A relatively small but growing number of consumers are taking advantage of voice over Internet for making international calls that are of high quality and at very low cost. (Skype is an example). Some calls can be made for as low as 4 cents per minute. The news about of voice of Internet is likely

to spread rapidly amongst the members of the business community and the educated workforce who have Internet services at work or at home. Peak-rate mobile call charges are also likely to decline with competition. New competitors coming into the Internet market will drive down Internet charges considerably and improve the quality of services to consumers by offering high speed broadband wireless Internet.

FIJI: Court Challenge of Phone Charges on Hold

Friday: June 10, 2005

A legal challenge to a controversial plan to raise line rentals and drop call charges has been put on hold - with talks now in progress that could possibly see the charges reviewed.

The Commerce Commission and Fiji International Telecommunications Limited (FINTEL) agreed to out-of-court talks aimed at allowing FINTEL to have its say over the new telecommunications pricing structure.

FINTEL's lawyer, Richard Naidu, said court proceedings had been adjourned to allow both parties to try to resolve the issue out of court.

FINTEL filed an injunction in the High Court two weeks ago seeking judicial review of the commission's new prices on telecommunication services. The injunction saw the commission put a three-month hold on plans to increase line rentals and drop international and regional call charges.

"We challenged the Commerce Commission's decision on the new pricing structure because they didn't consult us," Naidu said.

"When we sued them (Commerce Commission), they agreed to consult us further on the subject."

He said consultations had begun to decide on a new process through which FINTEL's views would be heard. – *Fiji Times/Pacnews*

FIJI: Phone Rate Hike on Hold

Wednesday: May 25, 2005

A court injunction by Fintel will delay the proposed change in telecommunication charges which had been due to take effect next Wednesday.

The national competition regulator, Commerce Commission, will issue a statement this week to announce the delay.

Commission chairman Thomas Raju told Fijilive that FINTEL filed an injunction for a stay order in the High Court in Suva and wanted a judicial review of the Commission's new price determination on telecommunication services.

Associated telecommunication providers, Telecom and Vodafone, have agreed to the commission's proposed new rates, however, since their pricing structure is interlinked with FINTEL, the implementation will be on hold.

According to Raju, the new rates would have seen local business calls charged at 10.91 cents a minute during peak times (between 9 am and midday, Monday to Friday). At other times, the charge would be 10.91 cents for every five minutes.

This introduces a time charge for such calls, when before they were at a flat rate per call

The new call charges determined by the Commission have drawn criticism from telecommunication carriers and consumers.

"The 10 cents per minute for local calls is nothing short of daylight robbery," says Fiji Retailers Association Vice President, Sudhir Dewa.

"The manner in which we are being levied the extra charge for line fees, the local rates should be zero. New Zealand and Australia also operate on a zero charge for calls.

"The Fiji public has once again been sold by the whims of the Commerce Commission and other monopolistic giants in Fiji." - Fijilive/Pacnews

Our analysis of the likely impact of full-scale competition in the Fiji Islands telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$26 million per year.

D. Papua New Guinea

The telecommunications market in PNG is relatively small in relations to its large population size of about 5.6 million persons and 1.2 million households. In 2002, there were only 62,000 main line telephones in operation. The number of telephones per 100 inhabitants was only 1.13 in 2002. There were 15,000 cellular mobile subscribers in 2002. The Asia Pacific Telephony (APT) year book for 2004 reports the following information about PNG telecommunication market.

The private sector accounts for about 46% of fix line telephone connections, while government and residential consumers account for 20% and 30% respectively. It notes that there is an enormously potential for market development and growth. Mobile telephone use has experienced strong growth and demand in line with international growth trends. Table 15 shows the ITU data for PNG.

Table 15: Papua New Guinea Telecommunications Data

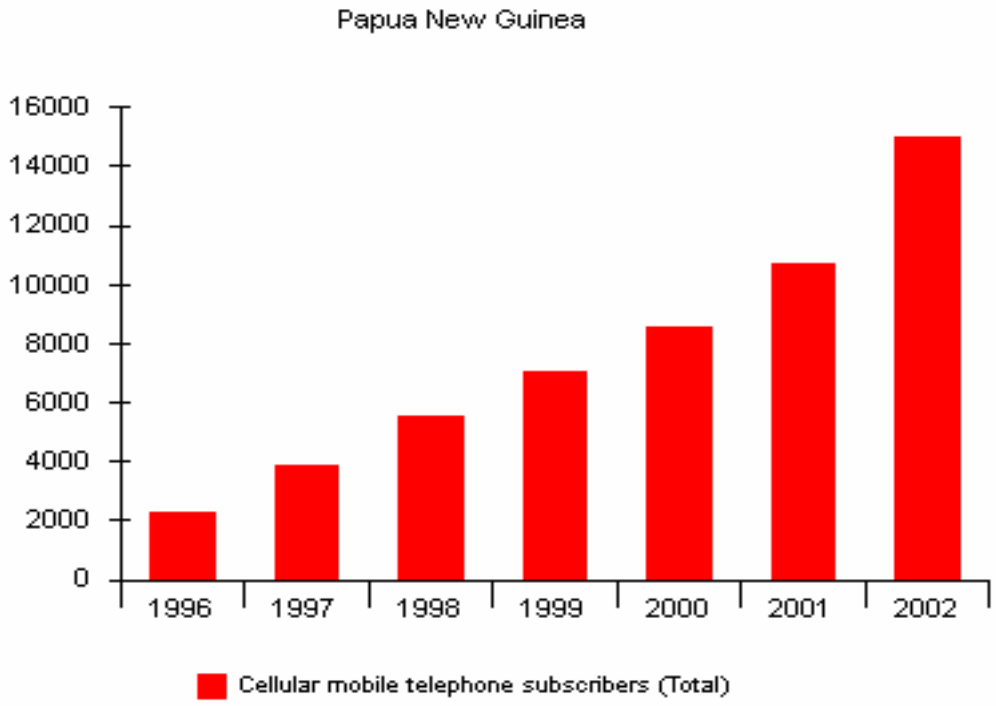
PAPUA NEW GUINEA	1999	2000	2001	2002
Total telecommunication service revenue (US$)	72979224	79150048	..	..
Cellular - cost of 3 minute local call (off-peak) (US$)	0.700389	0.809353	0.663717	0.576923
Cellular - cost of 3 minute local call (peak) (US$)	0.700389	0.809353	0.663717	0.576923
Cellular mobile telephone subscribers (Total)	7059	8560	10700	15000
Cost of a local 3 minute call (off-peak rate) (US$)	..	..	..	..
Cost of a local 3 minute call (peak rate) (US$)	0.311284	0.359712	0.064897	0.076923
Coverage of population (%)	..	..	..	..
International outgoing telephone traffic (minutes)	25200000	23739964	24900000	..
International incoming telephone traffic (minutes)	19576326	19209144	..	..
Internet subscribers	..	27000	..	..
Internet users per 100 inhabitants	0.703716	0.877131	0.944287	1.372621
Main telephone lines in operation	59773	64835	62000	62000
Main telephone lines per 100 inhabitants	1.201806	1.26375	1.170916	1.1347
Mobile communication revenue (US$)	3881869	4190803	..	..
Annual investment for telephone service (US$)	..	..	..	..
Business telephone connection charge (US$)	217.8988	201.4388	14.74926	12.82051
Business telephone monthly subscription (US$)	4.163424	3.852518	3.159292	5.128205
Cellular connection charge (US$)	466.9261	431.6547	26.54867	23.07692
Cellular monthly subscription (US$)	77.82101	89.92805	11.79941	10.25641
Main telephone lines in largest city	29107	29107	..	..
Number of local telephone (minutes)	26000000	31950000	..	..
Residential monthly telephone subscription (US$)	1.167315	1.079137	1.179941	1.794872
Residential telephone connection charge (US$)	46.69261	43.16547	14.74926	12.82051

Source: International Telecommunications Union (ITU) Database (http://www.itu.int).

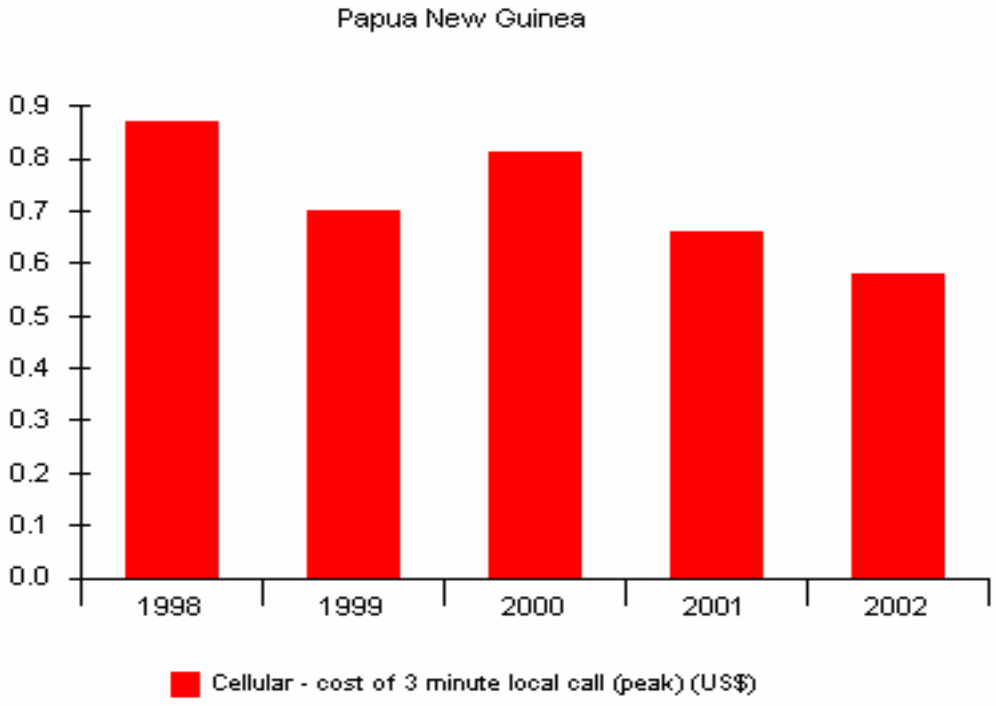
1. Mobile Communication in PNG

The Pacific Mobile Communications (PMC), a wholly owned subsidiary of Telikom PNG, provides mobile network services with a GSM network. The GSM services are available in Port Moresby and other major cities and towns.

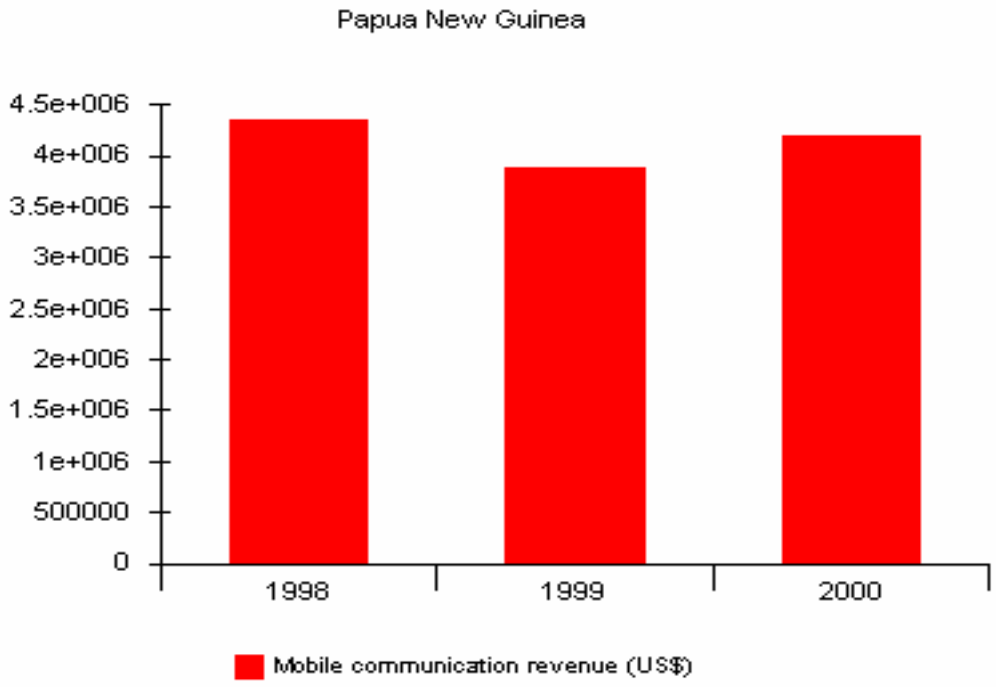
The graph below shows the number of mobile telephone subscribers. There has been a rapid growth in mobile subscribers and in 2002 there were 15,000 mobile subscribers.



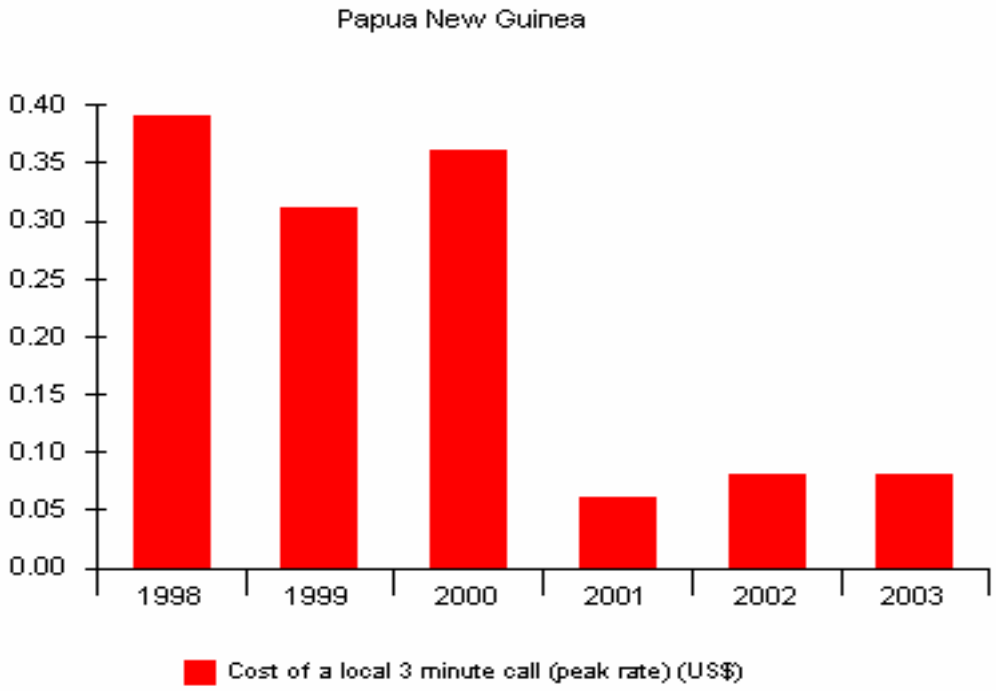
Source: International Telecommunications Union (ITU) Database (http://www.itu.int)



Source: International Telecommunications Union (ITU) Database (http://www.itu.int)



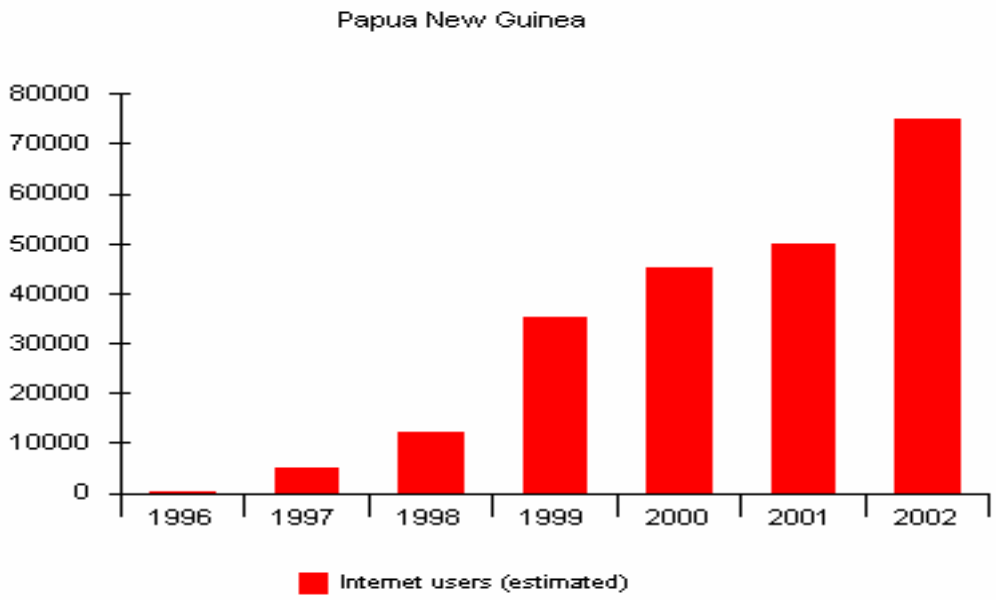
Source: International Telecommunications Union (ITU) Database (http://www.itu.int)



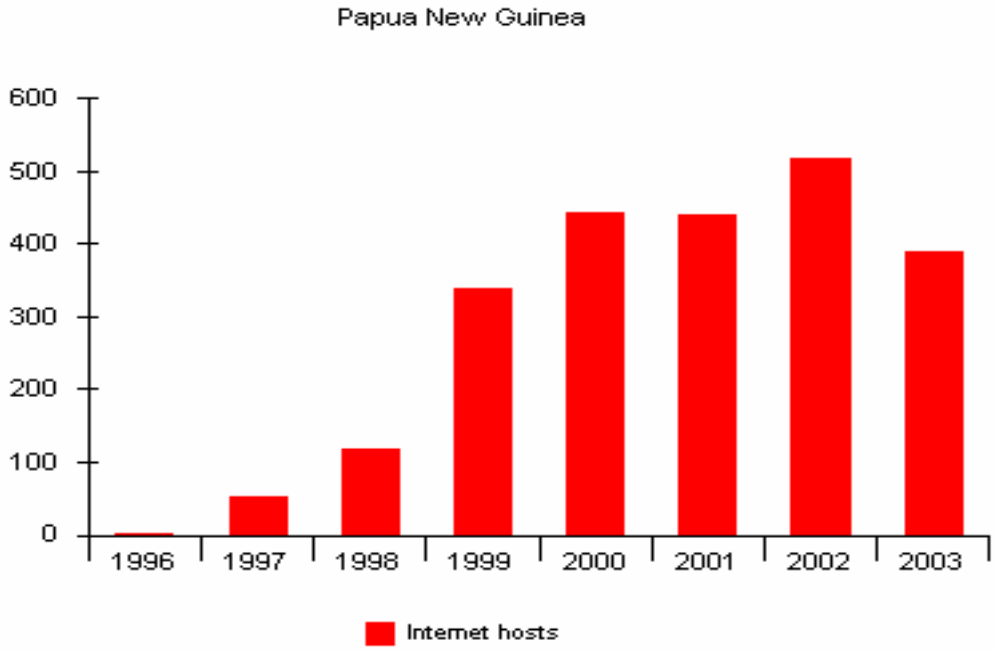
Source: International Telecommunications Union (ITU) Database (http://www.itu.int).

2. Internet

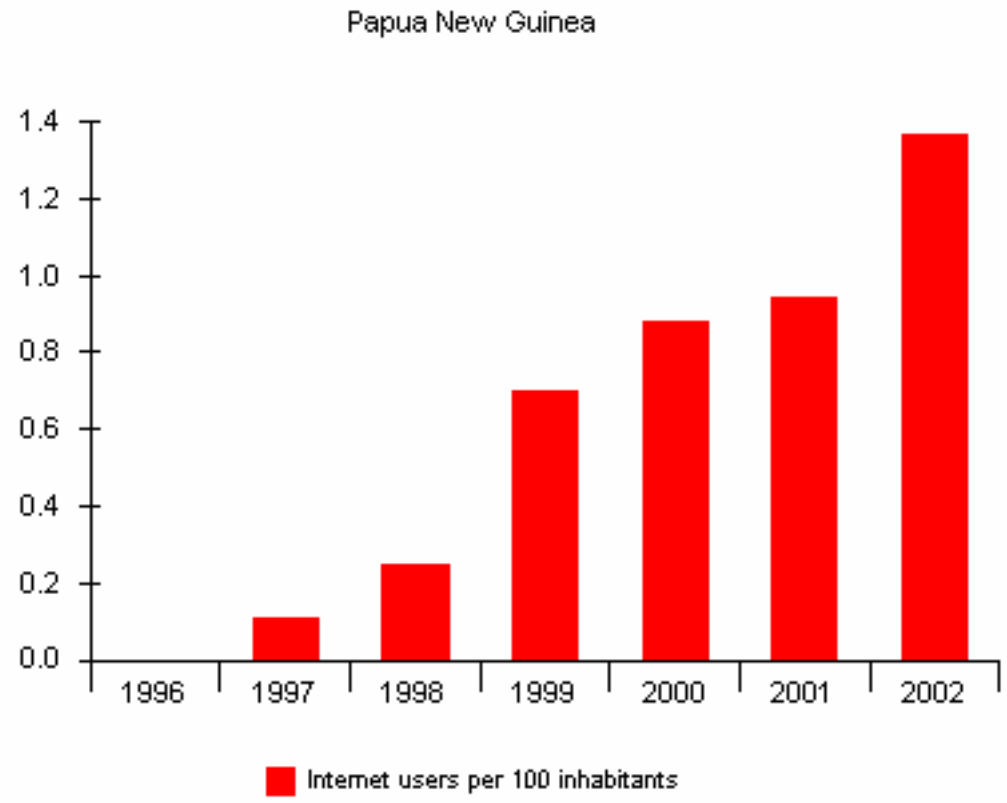
The Pacific Mobile Communications (PMC) also operates the Internet gateway and resells to five local Internet service providers namely Datanet, Daltron Electronics, Datec, DG Computers and Global Technologies. PMC has increased international bandwidth from 265 kbit/s to 2Mbit/s. The International Telecommunications Union reports that there are 75,000 Internet users in 2002.



Source: International Telecommunications Union (ITU) Database (http://www.itu.int).



Source: International Telecommunications Union (ITU) Database (http://www.itu.int)



Source: International Telecommunications Union (ITU) Database (http://www.itu.int)

3. Size of Telecommunication Market

The International Telecommunication Union annually collects information on total telecommunications services revenue, telephone service revenue and mobile revenue. Unfortunately, Telekom PNG has not provided the ITU with revenue data for the past four years. The most recent information available is for the year 2000. Total telecommunication revenue was 220 million kina, telephone service revenue was 183 million kina, and mobile communications revenue was 12 million kina.

4. National Policy, Privatisation and Competition

The current government is pursuing a policy of privatization of its telecommunication businesses particularly Telikom Limited. The objective of this policy is to ensure that telecommunications sector is stimulant rather than a bottleneck to economic development. The aim is to sell Telikom PNG to a strategic partner who is capable of rapidly developing the network through new investment in infrastructure. The government has put in place a regulatory framework. The government has established an economic regulator, the Consumer and Competition Commission, whose functions include licensing of telecommunication carriers, regulating pricing, and inter-connection. These responsibilities were previously undertaken by Telikom PNG. The privatisation process is currently on hold. The government has called for submissions and at one stage Telecom Fiji Limited was considering investing in Telikom PNG Limited. The government has experienced some difficulty in finding an appropriate partner. One of the issues the potential investors were particularly concern about was requirements and

capital costs of expanding services to new subscribers in uneconomic areas. The universal services obligations need to be clearly defined and new entrance into the market should be required to contribute to a universal services fund.

The PNG business environment is not particularly attractive to foreign investors because of the high cost of doing business and the uncertainty of the future business environment. With regard to telecommunications services, extending the network into rural areas is a complicated and expensive exercise due to the nature of the terrain and difficulty in collecting revenue from customers located in rural villages in isolated locations. Prepaid wireless services are likely to be cost effective in some locations. It is unlikely that another telephone company would be interested in providing fixed line telecommunications services in the rural areas and outer islands. The national transition network comprises a mixed analogy and digital microwave radio systems, domestic satellite network and small capacity transmission systems. High frequency radio systems are also used for subscribers that are beyond the reach of the microwave radio systems.

5. Impact of Deregulation of a Telecommunication Sector

This section speculates on the likely impact of deregulating the PNG telecommunication sector. There is already competition in the Internet sector with five different ISP competing for clients. It is likely that the mobile telephone market segment would be the most attractive to potential foreign investors. The mobile market has been growing rapidly and is concentrated in Port Moresby and the other main towns. Competition in the mobile market is likely to drive prices downwards by up to 50%. Consumers will benefit through lower mobile call charges for both local and international calls. The decline in call charges to result in a substantial increase in mobile usage and the price elasticity of demand is likely to be close to 1 or unity.

The main benefit of competition is likely to be a rapid decline in the price of international telephone calls. Private business enterprises, that represent 46% of telephone connections, will be the main beneficiary of the decline in international calls charges. There is no public information available on the total amount of telecom income that is derived from international calls, however, based on the Fiji Islands ratio it is estimated that 29% of total telephone revenue is for international calls. Given international experience, it is expected that competition will lead to international call charges declining by an average of 50%. The economic benefit to consumers (consumer surplus) of the decline in international telephones charges by 50% is estimated to be about US$25 million for the first year. Over a five-year period the total consumer benefit (consumer surplus) from international call charges reduction is estimated to be US$109 million.

According to our analysis, there would be significant economic benefits to consumers and private sector businesses in deregulating the telecommunications market in Papua New Guinea and making it open to competition. The possibility of new firms entering the market would motivate Telikom PNG to benchmark its prices for international telephone calls against international comparators. It is most worthwhile to make the market constable so that the current monopoly provider, Telikom PNG, knows that if it continues to exploits its monopoly power and makes supernormal profits, then it will attract the attention of investors who may enter the market to capture some of the excess profit. The threat of potential competition may motivate Telikom PNG to charge more moderate prices for international calls.

E. Solomon Islands

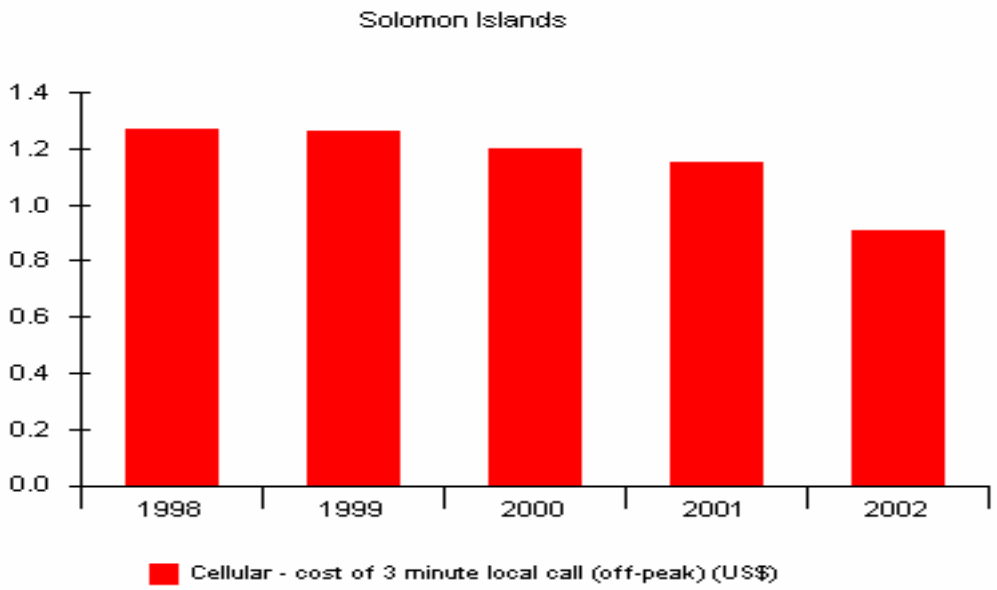
The Solomon Telikom Company Limited has been very well managed during the period of ethnic tension that bought the economy to a standstill. It remains one of the most successful companies in the Solomon Islands, employing some 212 staff as at March 2004. The number of

subscribers connected to the system as of March 2004 was 7,943 compared with 8,132 in March 2000. The number of Internet subscribers was 981 in March 2004. There were 333 public telephones in March 2004. The mobile telephone subscribers for the cellular GSM system was 981 in 2004. Almost half of the telephone subscribers are located in the capital of Honiara where there were 3,766 fixed line subscribers in 2004. The company made a profit before tax of Solomon Islands dollars (SI$)17.4 million in 2004 and the cash generated from the more profitable operations was largely use in capital expenditure of SI$28 million for 2004 financial year, an increase of 65% from 2003. The company is committed to developing and expanding its services and the General Manager records in the 2004 Annual Report that Telikom's decision to reinvest in new and replacement infrastructure was largely due to the signing of the new 15-year exclusive license. The Solomon Islands economy began to recover from the destructive period of ethnic tension after the arrival in July 2003 of the Regional Assistance Mission to the Solomon Islands (RAMIS). RAMIS rapidly restored law and order in the Solomons, which was facing bankruptcy and total collapse.

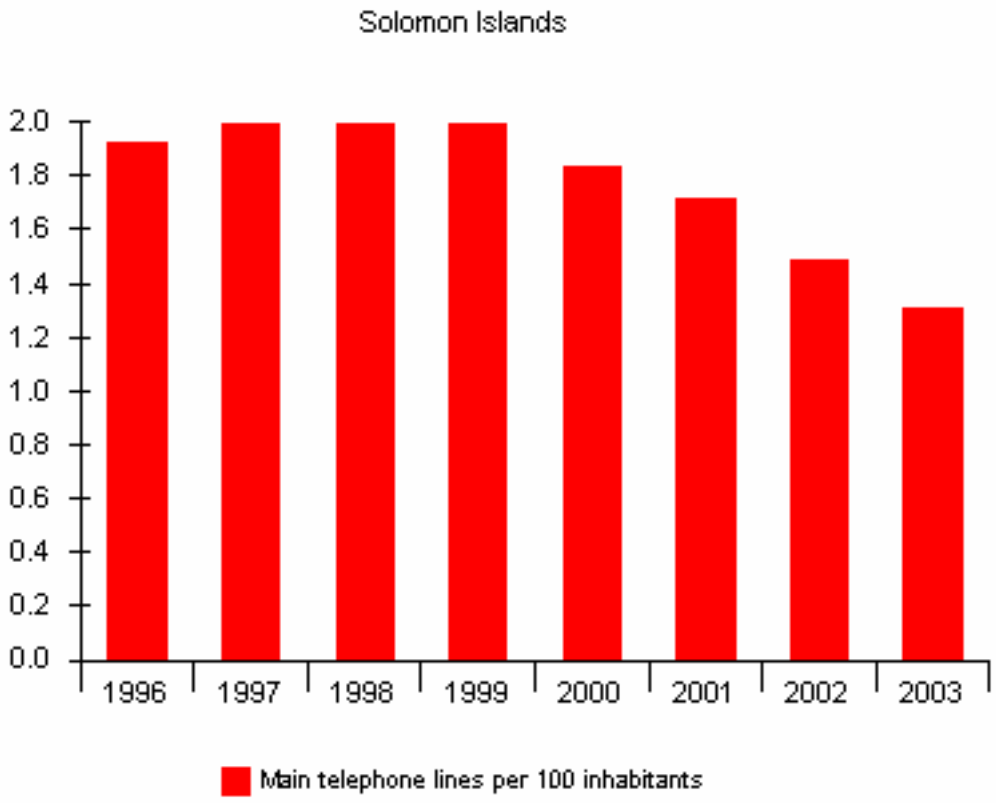
Table 16: Solomon Islands Telecommunications Data

SOLOMON ISLANDS	1999	2000	2001	2002	2003
Total telecommunication service revenue (US$)	14049587	11994106	12092453	..	..
Cellular - cost of 3 minute local call (off-peak) (US$)	1.264463	1.202358	1.154717	0.906667	..
Cellular - cost of 3 minute local call (peak) (US$)	1.264463	1.202358	1.154717	0.906667	..
Cellular mobile telephone subscribers (Total)	1093	1151	967	999	1488
Cost of a local 3 minute call (off-peak rate) (US$)	..	..	..	..	..
Cost of a local 3 minute call (peak rate) (US$)	0.095041	0.090373	0.086792	0.068148	0.061252
Coverage of population (%)	25	35	..	..	..
International outgoing telephone traffic (minutes)	1912000	2996647	5907270	..	..
International incoming telephone traffic (minutes)	3646556	6648912	..	..	..
Internet subscribers	1000	1150	906	988	1000
Internet users per 100 inhabitants	0.488947	0.47563	0.462675	0.49508	0.524109
Main telephone lines in operation	8132	7689	7389	6601	6238
Main telephone lines per 100 inhabitants	1.98806	1.828559	1.709352	1.485464	1.307757

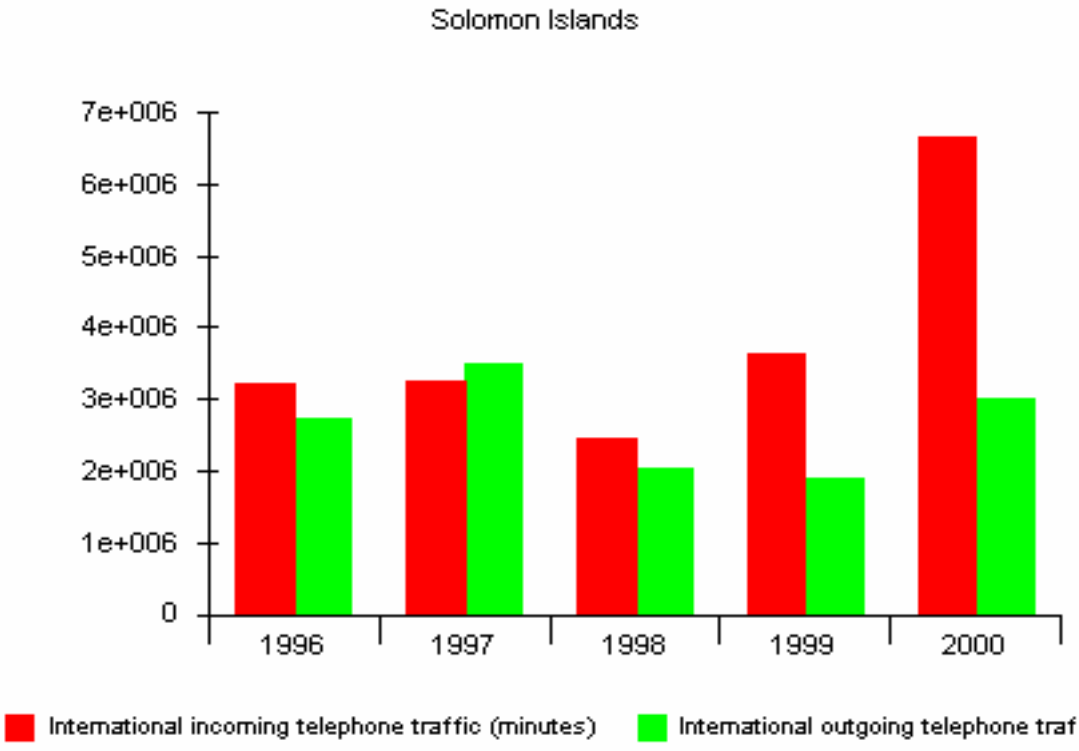
Source: International Telecommunications Union (ITU) Database (http://www.itu.int).



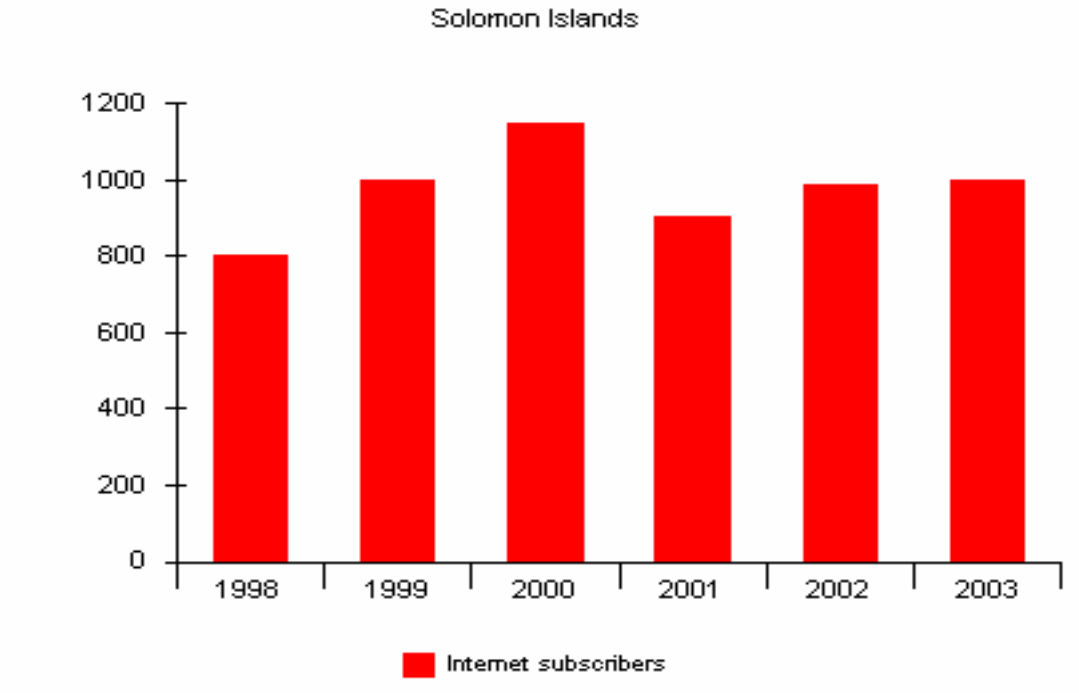
Source: International Telecommunications Union (ITU) Database (http://www.itu.int)



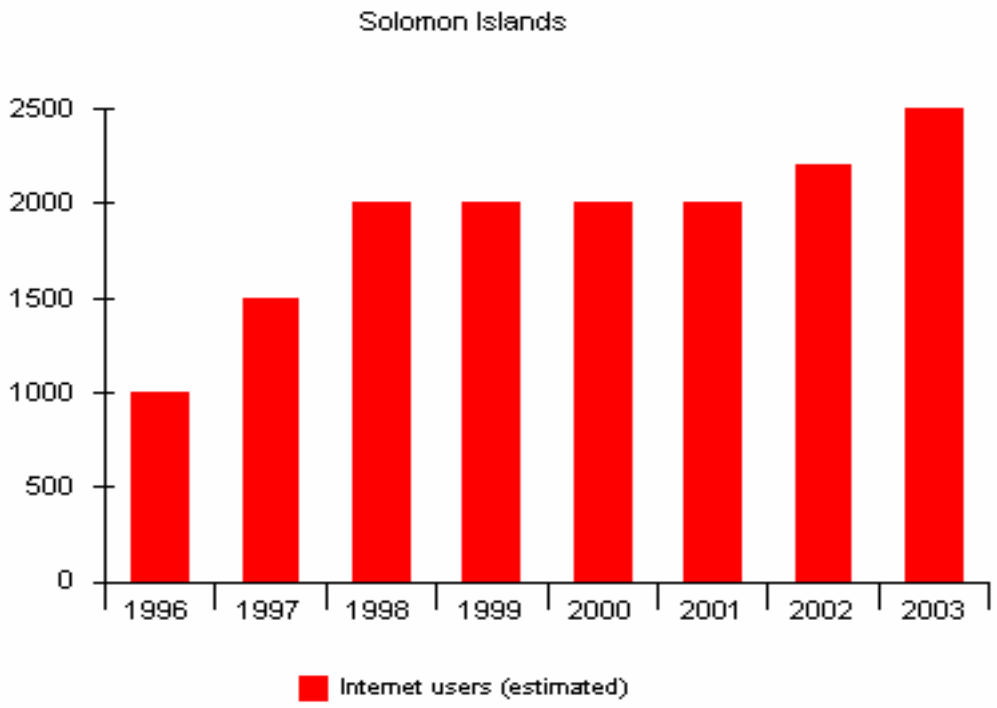
Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).



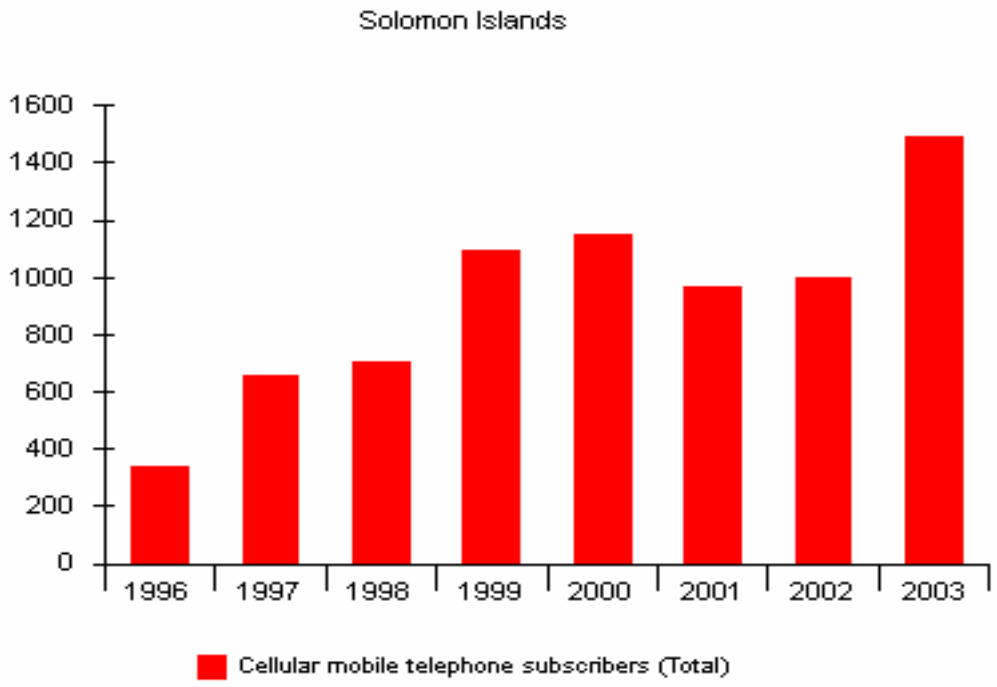
Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).



Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).



Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).



Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

1. Likely impact of Deregulation and Competition

Clearly the Solomon Islands government has decided that Solomon Telikom Company will maintain it monopoly status. It signed a new 15-year license with the company in 2004 ending many years of speculation. This has given the company some certainty about its future revenue stream and capacity to fund the investment in the much-needed new infrastructure to extend services to new customers outside the capital of Honiara.

Telikom in partnership with Solomon Islands Government is implementing a new initiative to provide telephony and ICT to 14 new rural sites.

This section postulates: what might occur if the Solomon Islands telecommunication market was fully opened to competition from new entrance. It asked the questions, would international companies be interested in investing in the Solomon Islands telecommunication market? What new technology might be introduced by new competitors? How might competition affect the price of services?

The Solomon Islands is a particularly difficulty market for foreign investors. The telecommunication market is very small and most of it is located in Honiara, which its self is a small town. Many of the rural areas and isolated islands are keen to have telecommunication services but the capacity of subsistence villagers to pay for the services is very limited. A major challenge is the provision of telecom services to isolated areas, many of which are not serviced with electricity.

Clearly there are not big profits to be made from investing in the Solomon Islands telecommunication market. Solomon Telikom carries a heavy responsibility for providing services to remote island communities. Many of these services are unprofitable and they are cross subsidies by the profits made from international telephone calls. International telephone call charges are high and these charges impact on the cost for the private sector of doing business.

2. Who would Benefit from Deregulation?

The main beneficiaries from deregulation would be private sector firms located in Honiara, especially those who are involved in international communications and transactions. It is likely that competition would lead to 50% decline in international telephone call charges. Estimating the likely consumer benefits is made difficulty because there is no information available on the total amount of revenue gained from international telephone calls. The 2004 Annual Report of Solomon Telikom shows in the Profit and Loss Statement that turnover for the year ending 31 March 2004 was SI$85.2 million. The operating Profit before Income Tax was SI$17.4 million in 2004.

The Internet market is so tiny with only 981 subscribers that it is unlikely to attract new entrants to come into such a small market. Also the mobile phone market with about 1,500 subscribers is currently not large enough to attract another mobile phone company due to the lack of economies of scale and the high fixed costs of establishing a second mobile service.

The only segment of the market which is likely to attract a new competitor is the international telephone call market. Some local firms are already likely to be using call-back services from Australia and New Zealand or the USA to gain the advantages of much lower prices. Also some firms may be using voice over Internet services.

In our scenario (based on the assumption of full deregulation of the whole telecommunications market) we predict that new entrants would enter the international telephone market using wireless technology and that the price of international calls would fall by an average of 50%. Consumers would save 50% of the cost of their current level of calls. It is assumed that the

government would require all new entrants to the international call market to pay a levy into a universal service fund may be as much as 10% of the average current international telephone call charge. The 50% reduced call fee assumes that the new entrants pay a 10% universal call fee levy and that without the levy the call fees would reduce by 60%.

Our analysis of the likely impact of full-scale competition in the Solomon Islands telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$2.5 million per year.

F. Nauru

Telecom Nauru operates a very small system with 600 subscribers located on the one island of Nauru, which consist of 21 sq km with a population of 11,845. Nauru uses the Australian currency. Overall telephone density is 18%, there are 300 persons on the waiting list for telephone lines. There are about 5,000 international outgoing calls per year. The government ministry responsibility for telecommunications services is the Telecommunication Department, Directorate of Telecommunication. Nauru is using Intelligent Document Recognition (IDR) satellite services for international communication and Demand Assigned Multiple Access (DAMA) for regional services. Nauru has digitized its telecommunication network and developed a direct international service. Nauruans are able to dial any country in the world direct, with fewer delays and clearer connections. Mobile cellular services have been extended to the business community and the customers via an Advanced Mobile Phone System (AMPS) cellular switch. Internet customers and digital switch subscribers use a copper cable network. Optical fiber cable and digital wireless loop technologies are being explored for future expansion of the network infrastructure.

Currently, Nauruans are experiencing sever financial constraints due to the lack of income from the extraction of phosphate which was the nation's main source of income. Family incomes have declined from a high per capita income of about US$3,000 to a low weekly income of government workers of less than a Australian dollars (A$)100 per week. With the greatly restricted family budgets it is to be expected that expenditure on telephone calls will remain low for at least the next ten years. It is very unlikely that deregulating the telecommunications market would attract foreign firms to set up new business in the country. Some companies may be willing to get up call back international card systems and no doubt Nauruans will look to saying income by using voice over the Internet services for international calls. We therefore conclude that the benefits of deregulations in the case of Nauru are likely to be small.

G. Niue

Niue has a population of only 1,650. The Communications Act 1989 established Telecom Niue to operate the domestic and international Postal and Telecommunications services. Telecom Niue was also given control and management of the frequency spectrum. New legislation is proposed for the continuing liberalisation process by the corporatisation of Telecom Niue.

H. Palau

The Republic of Palau is a sovereign nation that has a population of 19,129 at the last census in July 2000. It is an island chain consisting of several main populated islands and hundreds of smaller mainly uninhabited islands. The Palau National Communication Corporation (PNCC) is the Republic of Palau's national telecommunications carrier for local and international call services. It has about 7,000 subscribers, and an annual revenue of over US$8 million. The PNCC has been granted rights and authorization as the sole monopoly telecommunications provider. It has been corporatised and aims to be a self-sufficient business enterprise. It has secured a $39 million long-term loan from the USA to enable it to modernize it telecommunications infrastructure. The USA Rural Utilities (RUS) is providing financial,

technical and management assistance to it modernise. It uses varies digital satellite circuits with seven international carriers. International direct dialing was implemented in 1993 and PNCC also uses debit and credit card systems for international calls. Email services were introduces in 1997 and consumers have access to broadband Internet. ISDN technology is providing remote schools and medical clinics with distance learning and telemedicine services.

A special feature of PNCC is the assistance it receives from the United States, RUS service which has assisted it to complete rebuild and modernize the telecommunication infrastructure, according to stringent specifications and standards established by RUS.

1. Impact of Deregulation in Palau

Given the small size of the market and substantial technical and financial assistance provided by RUS, it is unlikely that new competitors would be attracted to set up businesses in competition with the PNCC. Deregulation or the threat of entry of a new competitor may, however, motivate PNCC to benchmark its prices for international telephone calls against international comparators. There are likely to be benefits from deregulating the telecommunications market to make it constable so that the current monopoly provide knows that it exploits it monopoly power and makes supernormal profits it will attract the attention of investors who then might enter the market to capture some of the excess profit. The threat of potential competition may motivate PNCC to charge more moderate prices for international calls. Our analysis of the likely impact of full-scale competition in the Palau telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$1.74 million per year.

I. Kiribati

1. Telikom Services Kiribati Limited (KSTL)

“Telecommunication Services of Kiribati Ltd (TSKL) was established in 1990 as a Joint Venture between the Government of Kiribati and Telstra Australia. It is the only national telecommunications supplier and offers a full range of services to the people of Kiribati. Employing 130 full time staff and approximately 25 casual staff it is one of the largest businesses in Kiribati. TSKL has experienced a high annual growth rate of approximately 10% over the last few years.

TSKL operates a wireless phone system, which is analogue and not compatible with GSM. TSKL also operates an ISP present in Tarawa and in Kirimati Island. Links with the rest of the world is achieved with Intelsat satellite and with equipment provided under a Forum Secretariat initiative. As the national ISP, TSKL also offers customer assistance in e-commerce and related subjects.

The regulator of the Kiribati ICT sector is the Ministry of Transport and Communications. New investment by TSKL includes four DRCS (Digital Radio Concentrate Systems) that have recently been supplied by Telstra, for the introduction of communication to the Outer Islands. These systems will provide voice, data and Internet at 9600 bps and will eventually be used for Telehealth and Tele-learning on the remote atolls”.

Source: World Bank – Report on Diagnostic Review October 2001; Meritec Limited 13.

2. Impact of Deregulation in Kiribati

Given the small size of the market, it is unlikely that new competitors would be attracted to set up businesses in competition with the TSKL. However, deregulation and the threat of entry of a new competitor may motivate TSKL to benchmark its prices for international telephone calls against international comparators. There are likely to be benefits from deregulating the

telecommunications market to make it constable so that the current monopoly provide knows that it exploits it monopoly power and makes supernormal profits it will attract the attention of investors who then might enter the market to capture some of the excess profit. The threat of potential competition may motivate TSKL to charge more moderate prices for international calls.

Table 17: Kiribati Telecommunication Data

KIRIBATI	2000	2001	2002	2003
Total telecommunication service revenue (US$)	4284884	4145078	..	..
Cellular - cost of 3 minute local call (off-peak) (US$)	1.046512	0.932642	0.978261	1.168831
Cellular - cost of 3 minute local call (peak) (US$)	1.046512	0.932642	0.978261	1.168831
Cellular mobile telephone subscribers (Total)	300	395	495	526
Cost of a local 3 minute call (off-peak rate) (US$)	..	..	..	..
Cost of a local 3 minute call (peak rate) (US$)	0.104651	0.093264	0.097826	0.116883
International outgoing telephone traffic (minutes)	474423	645750	..	..
International incoming telephone traffic (minutes)	..	1595965	..	..
Internet subscribers	500	548	758	..
Internet users per 100 inhabitants	1.771416	2.322395	2.2842	..
Main telephone lines in operation	3353	3628	4474	..
Main telephone lines per 100 inhabitants	3.959706	4.212824	5.109756	..
Business telephone connection charge (US$)	40.69767	36.26943	38.04348	45.45454
Business telephone monthly subscription (US$)	8.139535	7.253886	7.608696	9.090909
Cellular connection charge (US$)	40.69767	36.26943	38.04348	45.45454
Cellular monthly subscription (US$)	17.44186	15.54404	16.30435	19.48052
Residential monthly telephone subscription (US$)	4.651163	4.145078	4.347826	5.194805
Residential telephone connection charge (US$)	40.69767	36.26943	38.04348	45.45454

Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

Our analysis of the likely impact of full-scale competition in the Kiribati telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$0.95 million per year.

J. Marshall Islands

The Marshall Islands National Telecommunications Authority is a private corporation with significant ownership by the National Government that was established in 1987. It is the authorized provider of all telecommunications services for the people of the Marshall Islands, who number about 54,000.

Marshall Islands National Telecommunications Authority (NTA) has a monopoly on the provision of all telecom services in the Republic of the Marshall Islands (RMI). Until mid-2003 there was no local ISP, so Internet access was provided through a satellite link to IT&E Overseas on Guam. A digital TDMA-800 cellular service launched during 2000, replacing the island's original AMPS system. This system includes both fixed and mobile services and provides telephone service to some of the other islands in the Kwajalein Atoll where no fixed-line service is available.

Table 18: Marshall Islands Telecommunication Data

MARSHALL ISLANDS	2000	2001	2002	2003
Total telecommunication service revenue (US$)	6100000	5970000	6660000	6400000
Cellular - cost of 3 minute local call (off-peak) (US$)	0.3	0.3	0.3	0.3
Cellular - cost of 3 minute local call (peak) (US$)	0.3	0.3	0.3	0.3
Cellular mobile telephone subscribers (Total)	447	489	552	598
International outgoing telephone traffic (minutes)	1150045	1019282	679959	839769
International incoming telephone traffic (minutes)	2410229	2818361	2271966	3673358
Internet subscribers	409	472	654	695
Internet users per 100 inhabitants	1.550297	1.718311	2.351304	2.594514
Main telephone lines in operation	3999	4186	4379	4461
Main telephone lines per 100 inhabitants	7.749549	7.992058	8.237086	8.267235
Mobile communication revenue (US$)	2900000	1500000	..	..
Business telephone connection charge (US$)	35	35	35	35
Business telephone monthly subscription (US$)	30	30	30	30
Cellular connection charge (US$)	35	35	35	35
Cellular monthly subscription (US$)	25	25	25	25
Main telephone lines in largest city	2752	2872	..	..
Residential monthly telephone subscription (US$)	12	12	12	12
Residential telephone connection charge (US$)	30	35	35	35
Total telecommunication service revenue (US$)	6,100,000	5,970,000	6,660,000	6,400,000
Cellular mobile telephone subscribers (Total)	447	489	552	598
International outgoing telephone traffic (minutes)	1,150,045	1,019,282	679,959	839,769
International incoming telephone traffic (minutes)	2,410,229	2,818,361	2,271,966	3,673,358
Internet subscribers	409	472	654	695
Internet users per 100 inhabitants	2	2	2	3
Main telephone lines in operation	3,999	4,186	4,379	4,461
Main telephone lines per 100 inhabitants	8	8	8	8
Mobile communication revenue (US$)	2,900,000	1,500,000	..	..

Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

Our analysis of the likely impact of full-scale competition in the Marshall Islands telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$1.43 million per year.

K. Samoa

Information on the telecommunications sector development is covered in xx of this report. This part addresses the likely impact of any further deregulation that may occur in Samoa. Samoa is already enjoying the benefits of deregulation with strong price competition keeping call rates down.

Source: International Telecommunications Union 2005.

Table 19: Samoa Telecommunication Data

SAMOA	2000	2001	2002	2003
Total telecommunication service revenue (US$)	9726444	10057471	11568047	15151515
Cellular - cost of 3 minute local call (peak) (US$)	..	0.258621	0.266272	..
Cellular mobile telephone subscribers (Total)	2500	2500	2700	10500
Cost of a local 3 minute call (peak rate) (US$)	0.033435	0.031609	0.032544	0.037037
International outgoing telephone traffic (minutes)	12000000	13745617	7297975	7430381
International incoming telephone traffic (minutes)	..	12907841	19030486	19708750
Internet subscribers	300	1000	1320	..
Internet users per 100 inhabitants	0.565457	1.679731	2.217295	..
Main telephone lines in operation	8520	9670	11786	13287
Main telephone lines per 100 inhabitants	4.817697	5.414334	6.533259	7.292255

Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

Our analysis of the likely impact of full-scale competition in the Samoan telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$1.39 million per year.

L. Tonga

Information on the telecommunications sector development is covered in xx of this report. This part addresses the likely impact of any further deregulation that may occur in Samoa.

Tonga is already enjoying the benefits of deregulation with strong price competition keeping call rates down to the lowest in the Pacific Islands. The rates are comparable with New Zealand.

Table 20: Tonga Telecommunications Data

TONGA	1999	2000	2001	2002	2003
Total telecommunication service revenue (US$)	4315419	..	..	..	..
Cellular - cost of 3 minute local call (off-peak) (US$)	..	..	0.212264	0.068182	..
Cellular - cost of 3 minute local call (peak) (US$)	..	..	0.254717	0.095455	..
Cellular mobile telephone subscribers (Total)	140	180	236	3354	..
Cost of a local 3 minute call (peak rate) (US$)	..	..	0.04717	0.054545	0.084112
Coverage of population (%)	..	..	85	95	..
International outgoing telephone traffic (minutes)	1573880	2490000	3070000	..	..
International incoming telephone traffic (minutes)	..	..	..	..	..
Internet subscribers	..	1206	1407	1893	..
Internet users per 100 inhabitants	1.017294	2.434077	2.831143	2.923387	..
Main telephone lines in operation	9100	9700	10800	11201	..
Main telephone lines per 100 inhabitants	9.257376	9.837729	10.92012	11.29133	..

Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

M. Tuvalu

Tuvalu Telecommunications Corporation was established under the Tuvalu Telecommunication Corporation Act 1993. The corporation is the sole provider of telecommunication services and has been given exclusive rights under the Act to install and provide all telecommunications services in Tuvalu. With a population of about 10,000, Tuvalu has a very small telephone system, comprising only 650 subscribers.

Table 21: Tuvalu Telecommunications Data

TUVALU	2000	2001	2002	2003
Total telecommunication service revenue (US$)	1116279	1196891	..	..
International outgoing telephone traffic (minutes)	821980	822450	..	..
Internet subscribers	120	200	250	310
Internet users per 100 inhabitants	5.291005	10.52632	13.07395	18.75
Main telephone lines in operation	660	650	..	..
Main telephone lines per 100 inhabitants	6.984127	6.842105	..	..

Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

1. Impact of Deregulation in Tuvalu

Given the small size of the market and the low capacity of consumers to pay for telephone services, it is unlikely that new competitors would be attracted to set up businesses in competition with the TTC. Deregulation or the threat of entry of a new competitor may, however, motivate TTC to benchmark its prices for international telephone calls against international comparators. There are likely to be benefits from deregulating the telecommunications market to make it constable so that the current monopoly provide knows that it exploits it monopoly power and makes supernormal profits it will attract the attention of investors who then might enter the market to capture some of the excess profit. The threat of potential competition may motivate TCC to charge more moderate prices for international calls.

Our analysis of the likely impact of degegulation in the Tuvalu telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$0.32 million per year.

N. Vanuatu

Vanuatu has a population of about 204,000. Telecom Vanuatu Limited (TVL) was established in 1992 and has an inclusive license to operate all the telecommunications operations until the year 2012. It is a joint-venture company between the Government of Vanuatu, the Cable and Wireless, and France Telecom. Since 1990, TVL has invested over 3 billion Vatus to upgrade the whole of the telecommunications network, which is nearly fully digitalised. It is continuing to develop rural communications. Since 2002, a mobile GSM service has been operating in Port Vila, Luganville on Santo Island & Norsup on Malekula Islands. It offers services such as web hosting, permanent lease line, frame relays, data communications and Internet. Table 22 shows the operating statistics for Telecom Vanuatu Limited. We expect that the opening of this market to competition will have a very positive result and will attract new entrants.

Table 22: Vanuatu Telecommunications Data

VANUATU	2000	2001	2002	2003
Total telecommunication service revenue (US$)	11793476	12237430	..	..
Cellular - cost of 3 minute local call (peak) (US$)	0.98082	0.929048	0.862069	0.982077
Cellular mobile telephone subscribers (Total)	365	350	4900	7800
Cost of a local 3 minute call (peak rate) (US$)	0.147123	0.206455	0.215517	0.245519
Coverage of population (%)	..	..	20	..
International outgoing telephone traffic (minutes)	3370000	2815735	..	..
Internet subscribers	1400	1849	1500	1500
Internet users per 100 inhabitants	2.086594	2.793296	3.461919	3.610977
Main telephone lines in operation	6640	6762	6611	6540
Main telephone lines per 100 inhabitants	3.463745	3.434231	3.269535	3.148772
Business telephone connection charge (US$)	..	61.93655	64.65517	73.65578
Business telephone monthly subscription (US$)	..	10.8389	11.31466	12.88976
Cellular connection charge (US$)	65.38797	61.93655	35.91954	40.91988
Cellular monthly subscription (US$)	35.96338	34.0651	0	0
Residential monthly telephone subscription (US$)	..	10.8389	11.31466	12.88976
Residential telephone connection charge (US$)	..	61.93655	64.65517	73.65578

Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

There would be significant economic benefits to consumers and private sector businesses in deregulating the telecommunications market in Vanuatu and making it open to competition. The possibility of new firms entering the market would motivate TVL to benchmark its prices for international telephone calls against international comparators. It is most worthwhile to make the market constable so that the current monopoly provider, TVL, knows that if it exploits its monopoly power and makes supernormal profits, then it will attract the attention of investors who may enter the market to capture some of the excess profit. The threat of potential competition may motivate TVL to charge more moderate prices for international calls.

Our analysis of the likely impact of full-scale competition in the Vanuatu telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$2.98 million per year.

O. Cook Islands

The Cook Islands has a population of about 19,000 persons. Telecom Cook Islands Limited (TCIL) was established in 1991 as a joint venture between the Government of Cook Islands and Telecom New Zealand. Telecom New Zealand owes 60% of the shares in the company and the Cook Islands Government owns 40%. The company is the sole provide of telecommunications in the Cook Islands. It offers public telephones, faxs, Internet & directory services, and employees approximately 100 staff.

1. Impact of Deregulation in the Cook Islands

Given the small size of the market, it is unlikely that new competitors would be attracted to set up businesses in competition with the TCIL. There would be some advantage in deregulating the market and making it open to competition. The possibility of a new firm entering the market would motivate TCIL to benchmark its prices for international telephone calls against international comparators. There are likely to be benefits from deregulating the telecommunications market to make it constable so that the current monopoly provide knows that it exploits it monopoly power and makes supernormal profits it will attract the attention of investors who then might enter the market to capture some of the excess profit. The threat of potential competition may motivate LCIL to charge more moderate prices for international calls.

Our analysis of the likely impact of allowing competition in the Cook Islands telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$0.32 million per year.

P. Federated States of Micronesia

The Federated States of Micronesia, with a population of about 112,000, consist of 607 islands spread across approximately a million square miles in the Western Pacific Ocean. Telecommunications are supplied by the FSM Telecommunications Corporation. There are 12,000 main telephone lines. The overall telephone density is 8.02, with the rural telephone density being only 1.5. The number of cellular subscribers is about 4,000 and there are about 2,000 Internet subscribers. 7% of the population resides in urban areas and per capita GDP is US$2,157. The United States Rural Utility (RUS) has assisted with rebuilding and expanding the network which commenced in the mid-1900s. The development of the network in the 1900s led to the number of subscribers doubling and connected the network to remote communities.

Table 23: Telecommunications Data of the Federated States of Micronesia

FEDERATED STATES OF MICRONESIA	2000	2001	2002	2003
Total telecommunication service revenue (US$)	10950000	11000000	12000000	11000000
Cellular - cost of 3 minute local call (off-peak) (US$)	0	0	1.2	1.2
Cellular - cost of 3 minute local call (peak) (US$)	0	0	1.8	1.8
Cellular mobile telephone subscribers (Total)	0	0	100	5869
Cost of a local 3 minute call (off-peak rate) (US$)	..	..	..	..
Cost of a local 3 minute call (peak rate) (US$)	0	0	0	0
Coverage of population (%)	0	..	..	..
International outgoing telephone traffic (minutes)	1941654	2538907	2478929	2387050
International incoming telephone traffic (minutes)	4722100	5768809	6737852	6395572
Internet subscribers	1482	1500	1695	1913
Internet users per 100 inhabitants	3.738038	4.659832	5.576208	9.26784
Main telephone lines in operation	9647	10078	10106	11144
Main telephone lines per 100 inhabitants	9.015214	9.392358	9.392193	10.32808
Mobile communication revenue (US$)	0	0	0	0
Annual investment for telephone service (US$)	..	1800000	2600000	2400000
Business telephone connection charge (US$)	24	24	24	24
Business telephone monthly subscription (US$)	16	16	16	16
Cellular connection charge (US$)	0	0	..	..
Cellular monthly subscription (US$)	0	0	0	0
Main telephone lines in largest city	..	..	..	..
Mobile communication investment (US$)	..	..	..	..
Number of national long distance telephone (minutes)	1207283	1024352	1454988	1356672
Number of local telephone (minutes)	..	..	42314720	42539852
Residential monthly telephone subscription (US$)	8	8	8	8
Residential telephone connection charge (US$)	24	24	24	24
Telephone faults per 100 main lines	66.12	48.1	48.1	48.1

Source: International Telecommunications Union (ITU) Database, 2005 (http://www.itu.int).

1. Cellular Network

The FSM Telecommunication Corporation (FSMTC) operates GSM cellular mobile network serving the states of Pohnpei, Kosrae, Yap and Chuuk. Also Internet services are provided through a dial-up connection in the four states. Satellite communication is costly for FSM and a link to the fiber optic network will have a large positive impact allowing easy access to broadband technology. Linkage to the international fiber connection is a high priority for the FSM Government.

2. Impact of Deregulation on FSM

FSM is in the similar situation to the Republic of Palau. It has the national telecommunications company has received substantial government financing and technical assistance from the RUS, in accordance with their high standards and specifications. Its assistance has greatly modernize the network by developing digital switches placing the majority of cable underground and replacing worn copper cables.

Due to the small size of the market it is unlikely that international investors will be attracted to enter the market. However, there would be some advantage in deregulating the market and making it open to competition. The possibility of a new firm entering the market would motivate FSMTC to benchmark its prices for international telephone calls against international comparators. There are likely to be benefits from deregulating the telecommunications market to make it constable so that the current monopoly provide knows that it exploits it monopoly power and makes supernormal profits it will attract the attention of investors who then might enter the market to capture some of the excess profit. The threat of potential competition may motivate FSMTC to charge more moderate prices for international calls and introduce new technology more rapidly.

Our analysis of the likely impact of allowing competition in the FSM telecommunication market is shown in Table 1 of this report. The economic benefits to consumers are estimated to be US$2.61 million per year.

Q. Longer-term Dynamic Impact on Economic Development

The long term dynamic impacts of deregulation are likely to be very positive and a stimulant to economic growth. This section of this report draws on research and publications the author has conducted with Professor Jan Nowak from the University of the South Pacific and Professor Charles Davis from the New Brunswick University (Davis, McMaster, Nowak)

1. Benefits of Telecommunications Deregulation for New Business Opportunities

Deregulation of telecommunications in the Pacific will substantially lower international communications costs of all businesses and open up new business opportunities. Many Australian and New Zealand enterprises are reducing their operating costs by outsourcing IT – enabled business functions to firms operating in low wage countries. Business process outsourcing (BPO) - outsourcing of information systems, data processing services, and other IT-enabled business services (ITEBS) - represents a development opportunity for some Pacific Island economies such as Fiji Islands, Samoa and Tonga. With deregulated and competitive telecommunication sectors, Fiji Islands, Tonga and Samoa could develop back-office industries employing an estimated 20,000 young ICT skilled workers over the next decade.

IT-enabled business services are increasingly footloose and could be attracted to some Pacific Island countries providing they offer significant cost advantages, and have in place the IT infrastructure, cyber laws and a market friendly investment environment.

Global trade in IT-enabled services (ITES) is expanding rapidly as connectivity decreases the transaction and communication costs among firms. Chief among these services are IT-enabled business services (ITEBS) – services that are used internally by firms to produce a final good or service for customers. Lower-skill ITEBS, such as keyboarding, text entry, transcription, data processing and contact centres can be located successfully in low-income countries, provided that infrastructure standards and other conditions of service quality are met. India is the undisputed leader in business process outsourcing, but other countries with major outsourcing capability include Canada, People's Republic of China (PRC), the Czech Republic, Hungary,

Ireland, Israel, Mexico, the Philippines, Poland, Russia, and South Africa. Belarus, Caribbean states, Egypt, Ukraine, Bangladesh, Cuba, Ghana, Senegal, and quite a few others, including Fiji Islands, are developing outsourcing capability or have announced their intention to do so (Rundell, 2003; UNCTAD, 2003). Highly knowledge-intensive business services (such as R&D and engineering, software development, content production, or highly reliable applications hosting) have been traditionally located in or near major metropolitan areas in developed countries, but they are increasingly footloose and now can be found in locations with pools of highly skilled workers and appropriate infrastructure and amenities.

Overall, global outsourcing of manufacturing and services doubled in value to approximately one trillion dollars between 1997 and 2000, with North America, Europe, and Asia accounting for 94% of the outsourcing market (Corbett, 2001a). The fastest growing areas of outsourcing are in business process or back office functions such as human resource administration, media management, information technology, customer care, and marketing (Corbett, 1999).

The Fiji Islands Government has recognised the potential for the development of the IT-enabled business services and is keen to quickly establish a niche in this rapidly expanding market. The Government considers that Australia and New Zealand are most likely to be the main markets of ITEBS because of their closeness to Fiji Islands. Since 2001 the Fiji Islands Trade and Investment Bureau (FTIB) has been lobbying the Fiji Islands Government to allocate resources to establish an information technology park and also to fund a more aggressive targeted marketing campaign to establish Fiji Islands as a new location for back offices IT services.

By November 2003 the results of a modestly funded FTIB marketing effort are bearing fruit. Several pioneering firms are now in operation in the banking and credit card services, insurance claims processing and airline industry voucher processing, as well as call centres for IT support services.

Quest Ltd, a subsidiary of the ANZ Bank Limited, has established an IT business centre in Suva that employed 53 full-time staff by October 2003 with expansion plans to double its employment during the coming year. It provides 24-hour on-line technical support services to 22 countries on IT systems support through its call centre in Suva. It also provides ANZ Visa Card support services and back office corporate services in finance and marketing to ANZ banks located in several of the other Pacific Island countries.

Affiliated Computer Services opened its doors on 29 October 2003, employing 60 trained staff to undertake airline voucher processing for Air New Zealand. It has rented two floors in the new Fijian Holding Limited office tower in central Suva. It also plans to expand rapidly to increase its workforce to over 120 persons within a year of commencing operations.

Computech Limited has also commenced operations in the software development industry employing more than a dozen IT professionals including skilled programmers with university IT degrees. It has a contract with a USA state government for software development work.

Other developments include Colonial Insurance that undertakes medical claims processing for Pacific Island clients, Telecom Fiji that operates a 29-seat call centre and the Westpac Bank that services its regional bank office IT network from its Suva-based IT operation. Apart from call centres, a project that has attracted a lot of attention in Fiji Islands is the proposed development of an audio-visual industry, for which the Fiji Audio Visual Commission (FAVC) has been established. As a starter, the “Studio City Zone” has been set up in Yaqara, on the northern shores of the main island of Viti Levu. The 2200-hectare Studio City is a tax free zone for business and individuals. It is designed to attract investors in filmmaking, tourist resorts, residential housing, retail, and audio-visual education fields (FAVC, undated).

IT-enabled business services can be classified into three kinds of activities: administrative,

customer services, and technical, and into three levels of skill- and knowledge-intensity – low, medium, and high (McMaster and McGregor, 1999).

Table 24

SKILL LEVEL AND KNOWLEDGE INTENSITY	ADMINISTRATIVE	CUSTOMER SERVICE	TECHNICAL
Low	Data entry; clerical	Call centre; routine queries; order taking; direct mail order processing	Transcription; indexing and abstracting
Intermediate	Secretarial; data capture and processing; mailing lists; credit card application processing	Account queries; after sales support; insurance claim processing, processing of warranty card and claims	Website design and management; medical records management; medical transcription
High	Accounting; payroll; electronic publishing; facilities management; management consultancy; legal services	Problem and dispute resolution	Software development; R&D; application hosting; technical writing; computer aided design; tele-medicine; engineering design; education; animation

Source: Adapted from McMaster and McGregor (1999).

The resulting taxonomy provides a view of the ranges of service activities that can be offered at the three levels of complexity. The simplest tasks are routine data entry, customer service, and clerical activities. Intermediate services include ones requiring some judgement or unscripted interaction on the part of workers: secretarial work, application or claim processing, management of records, transcription of specialised documents, and some kinds of website design and management. High-end ITEBS include remote delivery of professional services, dispute resolution, and complex technical or creative work such as software development, technical writing, animation, or remotely delivered educational or health services. Specialised markets are rapidly developing for low-skill services such as data processing and customer service delivery as well as for critical knowledge-intensive business service activities such as R&D and engineering design (Quinn, 2000). When business processes are of a strategic nature, firms prefer to outsource to “captive service farms” rather than to third-party service providers in an arm’s-length relationship (Aron and Singh, 2002).

Low-end IT-enabled business services have been targeted as a strategic priority by many developing countries or regions. ITEBS are increasingly footloose, and any country with an appropriate telecommunications infrastructure and suitably qualified labour can compete for them. Entry barriers are relatively low: investment requirements are not great, the services are labour-intensive, cycle times are short, and many kinds of ITEBS do not require high levels of technical expertise. Therefore competition is intense. Here we briefly review the factors that condition the ability of a country to supply ITEBS exports.

Migration of business services to low-income countries is driven first and foremost by the lower costs of critical human resource inputs. Labour is often the single largest cost component of a service activity, representing up to eighty percent of the cost of a contact centre, for example. The cost savings for professional services supplied from a low-income country can be substantial. Qualified accountants in India are paid $3,000 per annum compared to $35,000 in the United States. Western companies such as GE Capital Services, British Airways and American Express are reported to have saved 40-50% of operational costs by shifting their

customer interaction centres to India (Anonymous, 2001b). However, in addition to the cost savings that translate into shareholder value, executives of firms that outsource business processes or back office functions consider that outsourcing yields improved service quality and freedom to focus on core competencies (Management Trends in Outsourcing, 2001).

Linguistic ability is the second most important factor in the ability to compete as an ITEBS provider. Many customer services require knowledge of English. Countries that possess disciplined and literate workers able to work in or with English have a competitive advantage, at least in many of the lower-skilled service segments. This is one reason why certain Asian countries are best positioned to take advantage of the current outsourcing boom (Corbett, 1999).

Quality of telecommunications infrastructure and the connectivity speed and costs constitute the third most critical factor in developing successful ITEBS. As ITEBS are traded over long distance, they are very sensitive to the speed and costs of transacting and communicating. Access to high speed Internet connections and the costs of Internet services are of particular importance to ITEBS providers.

The fourth most important factor is the regulatory environment affecting the development of ITEBS. International rules of trade in services are sensitive to ongoing negotiations concerning movement of persons, definitions of subsidies, government procurement practices, taxes and regulations on electronic commerce, and market access. The elements of a national regulatory environment that affect the development of tradable ITEBS include “cyber laws” regarding digital signatures, information privacy, encryption, intellectual property; labour laws permitting contingent, twenty-four hour labour employment; regulations affecting the availability, cost, and quality of telecommunications services; taxation laws; and domestic, inward, and outward investment policies. Investors in ITEBS prefer to establish ventures in countries that offer:

- Transparent, consistent and predictable commercial laws and business environment,
- Sound macroeconomic management of the economy, with low inflation and relatively stable foreign exchange rates as well as easy repatriation of profits and capital,
- Safety and security of persons and property,
- Protection of property rights and enforcement of contracts, and
- Political and economic stability (Duncan et al., 1999).

Although demand for ITEBS is booming, several factors on the horizon could reduce or alter the composition of demand for these services. Since demand for cost efficiencies drives the development of many outsourced ITEBS, technological advances that substitute for low-skilled labour may reduce the need for some kinds of services. For example, smart products and optical recognition may reduce the need for data keyboarding, and voice recognition and artificial intelligence technologies may reduce the need for low-skilled customer service representatives. The differentiation of customer services along a scale from routine to high touch/high quality has led to the option of “near-sourcing” high grade customer contact services in Canada, where the labour force is literate, disciplined, and affordable (McCracken, 2003). Finally, the development of intelligent systems will allow firms to selectively route tasks on the basis of cost, opportunity, or skill, resulting in virtual service networks in which individual service providers can be located practically anywhere.

Taking the above research findings into consideration, how does Fiji Islands, Tonga and Samoa fare as a potential locale for placing outsourced IT-enabled business services?

Fiji Island’s economy is dominated by the services sector that accounts for 70% of employment and income. In the context of outsourcing ITEBS, it is also worth noting that Fiji Islands is located on a time zone 12 hours ahead of GMT, thus making the country’s location ideal for “overnight” processing of data sent from Europe and North America.

The lower wage cost is the major factor that makes Fiji Islands , Tonga and Samoa attractive choices for ITEBS firms. Table 1 presents comparative wage rates for semi-skilled IT workers in 5 countries, including Fiji Islands. Two of them, Australia and New Zealand, are primary target markets for outsourcing ITEBS from Fiji Islands, and the remaining three, Singapore, Fiji Islands and India, can be considered as competing providers of these outsourced services. Fiji Island's wage rates are around one-fifth of those in Australia and New Zealand. Both countries' IT-services firms can obtain substantial cost reductions by locating their services in Fiji Islands. At the same time, Fiji Island's wage rates are comparable to those of its main competitor - India - that has been successful in developing ITEBS exports.

Another key condition of attracting outsourced ITEBS pertains to the English language capabilities, education levels and requisite IT skills of the work force. Fiji Islands has both strengths and weaknesses in these areas. It has an English speaking, generally well-educated population, but at the same time it suffers from the lack of adequate IT-skills among students and graduates.

Table 25: Comparative Wage Rates for Semi-Skilled IT Workers

COUNTRY	*F$ PER HOUR*
Australia	15-20
New Zealand	10-15
Singapore	4-8
Fiji Islands	2-4
India	2-3

Source: TARPnz Strategic Methods Limited, 2001, p. 13.

English has become the official language in Fiji Islands for state transactions and inter-communal exchange, as well as for business. This is in spite of the fact that the 1997 Constitution recognises that Fiji Islands is a multilingual state with the main languages (Fijian, Hindi and English) being equal in terms of status, use and function. The reality is that in a multi-ethnic Fiji Islands, there is a need for a *lingua franca* and this need is perfectly filled by English (Fiji Islands Education Commission, 2000). English is also the language of education used at all the three levels of education - primary, secondary and tertiary[1].

Fiji Islands ranks favourably among its main potential competitors in ITEBS industries in terms of literacy levels of its population. Fiji Island's literacy rate of about 93 % is higher than that of India (57%), PRC (84%), Dominican Republic (84%) and Mexico (91%), and is only slightly lower than that of the Philippines (95%) (UNESCO, 2002). The country also ranks favourably when the education index, prepared for the UNDP Human Development Report, is used as a measure of educational attainments[2]. Of the 24 small nation states included in the UNDP Human Development Report (UNDP, 1999), Fiji Island's education index placed the country at the top of the group (6th place). Overall, the population of Fiji Islands achieved an educational attainment index of 0.88, which is higher than the average for the developing countries as a whole, and higher than the indices for South East Asia (0.67) and the Pacific (0.8). Based on the

[1] **English is formally used as the instruction language from the fourth year of the primary school on. However, many primary schools use it as the instruction language from year one (Fiji Islands Education Commission, 2000).**

[2] **The index is calculated on the basis of a country's combined primary, secondary and tertiary education enrolment levels along with its literacy rates.**

above figures, one can conclude that Fiji Islands is better positioned than most of its main competitors in terms of the availability of well-educated employees required by ITEBS firms.

Although general education levels of Fiji Island's work force may be adequate, for IT-enabled business services such general levels, although indispensable, are often not sufficient. What is increasingly sought by IT firms is a computer-literate work force. In developed countries, major efforts are being made to fully computerise teaching and administration in secondary schools and to introduce computers extensively at primary education level. In developing countries, on the other hand, such efforts are rare, although there are noticeable exceptions. In Malaysia, for example, the "Smart Schools" initiative is aimed directly at producing a highly computer-literate generation of school leavers during this decade (TARPnz Strategic Methods Limited, 2001). In Fiji Islands, such initiatives are lacking, mostly due to a shortage of funds, equipment, qualified teaching staff, and materials. As a result, very few secondary school leavers are computer literate and therefore only a small minority of secondary school graduates are expected to attain tertiary-level computing-related qualifications.

The quality and costs of telecommunication services is the third most important factor conditioning the development of ITEBS in low-income countries. In this area, Fiji Islands has major weaknesses. A Discussion Paper published by the Pacific Islands Forum Secretariat in 2000 (Pacific Islands Forum Secretariat, 2000) points to high cost of Internet access in Fiji Islands, especially for high volume (business) users, as compared to the Internet costs in developed countries. Although the situation has improved since 2000, costs of Internet access in Fiji Islands are still considerably higher than in neighbouring developed countries; they are almost three times as high as the equivalent access costs in New Zealand and nearly two times as high as in Australia (ITU, 2003). However, in comparison to other Pacific Island countries, for which ITU has recently collected data, Fiji Island's rates are not high (see Table 2). Also, Fiji Islands has some of the better telecommunications infrastructure and educational facilities in the region.

Table 26

(US$)

COUNTRY	TOTAL INTERNET ACCESS PRICE INCLUDING TELEPHONE USAGE CHARGE, 20 HOURS OF USE
Fiji Islands	31.74
French Polynesia	69.29
Marshall Islands	20.00
New Caledonia	80.34
Papua New Guinea	20.00
Samoa	42.97
Solomon Islands	91.15
Tonga	45.45
Vanuatu	46.70
Average	49.74

Source: ITU (2003).

On the positive side, a mention should be made of the high bandwidth capacity of the Southern Cross fibre-optic cable, which was launched in November 2000. The cable, linking Fiji Islands directly to Australia, New Zealand and the U.S., has given Fiji Islands the fast and reliable connection to the Internet that ITEBS need. In practical terms, it provides the carrying capacity for much increased level of telecommunications traffic, needed, for example, for multiple call centres and high volume data transfers. The Southern Cross cable places Fiji Islands, at least potentially, on a par with any other competing location globally.

Generally speaking, Fiji Islands has a market friendly business environment, sound macroeconomic policies, low inflation, and a relatively stable foreign exchange rate. Fiji Islands also has a modern set of commercial contract laws that are enforced by the judiciary. It offers relative safety and security of persons and property, and enforcement of commercial contracts. In terms of foreign investment, Fiji Islands has mainly attracted investment from family owned companies from Australia and New Zealand. A recent survey by the Fiji Islands Trade and Investment Bureau (FTIB) has found that the majority of investors over the last decade have been owners/managers who are seeking a relaxed island lifestyle in an unpolluted, healthy environment with good quality schools, hospitals and a modern regional university with satellite network to 12 countries.

In its Web page, FTIB advertises the following advantages that Fiji Islands offers to potential investors:

- Easy repatriation of capital and profits.
- An adaptable, productive, industrially disciplined and English speaking labour force with low wage rates.
- An attractive package of financial and other incentive schemes.
- Reasonable air and sea links with overseas markets
- Sophisticated telecommunication links with the rest of the world
- A well developed infrastructure, including electricity, water supplies and internal communications
- Availability of factory land and buildings at reasonable rates.
- Well-developed banking and financing institutions providing full ongoing financial services.
- Under the Foreign Investment Act 1999, the FTIB issues business certificates to all new proposals within 15 days of receiving complete proposals.

In spite of this encouraging advertisement, foreign investors' impression of the real situation is far from being rosy. Notably, "red tape" and bureaucracy are rated highly among obstacles to doing business in Fiji Islands. Even if the FTIB issues a Foreign Investment Certificate promptly, a foreign investor is subsequently faced with a daunting task of obtaining numerous approvals from various authorities. Some of these approvals may take months or years to obtain. For example, it is reported that it typically takes about a year to obtain approvals from the Lands and Survey Department; some potential investors are reported to have gone bankrupt because of the delay (Asian Development Bank, 2000). Other obstacles pointed to by foreign investors include restrictive immigration requirements and procedures, a lack of clear accountability, responsibility and urgency among government agencies, and a low level of competence and efficiency among the staff handling foreign investment cases (TARPnz Strategic Methods Limited, 2001).

R. Impacts on Consumers, Producers and the Government

The table below summarises the likely impacts of deregulation on the various consumer and producer groups.

Table 27: Economic Benefits and Costs of ICT Deregulation in the Pacific Islands

GROUP	COSTS	BENEFITS
Urban Residential Consumers		• Reduced tariffs • Increased consumer surplus • Improvement in ICT service quality • Choice of providers
Rural Consumers	Slower roll out of fixed-line network to isolated locations that are uneconomic	• Reduced cost of some ICT services • Improved quality of services • Introduction of new wireless services
Private Businesses		• Reduced business ICT costs • Businesses more competitive globally • Expanded use of Internet of business functions • Opportunities for new Business Process Outsourcing
Government and other public utilities		• Reduced cost of ICT services for government departments and public enterprises • Improved Internet services and more rapid introduction of e-government • Increased government revenue from a more rapid growth of ICT total revenue
Regulator for ICT	Need to strengthen regulation to ensure strong competition on a level playing field	
Monopoly ICT Provider	• Loss of monopoly market power • Loss of opportunity to make supernormal profits • Pressure to reduce costs and to excess staff • Lower incentive to invest in long term capital infrastructure • Reduced capacity to repay loans for previous capital investment • Reduced market share • Strong price competition from new competitors • Need to improve productivity	
New ICT providers		• Opportunity to enter new profitable market • Opportunities to test new technology in small markets
Educational Institutions		• Reduced cost of Internet for e-learning

1. Measuring the Benefits to Consumers

The benefits to consumers are fully discusses in section II.D. of this report.

Consumers will be the main beneficiaries of increased competition. Tonga, Samoa and other country experience has shown that charges decline sharply following the entry of new providers

in the market. The price elasticity of demand for international telephone calls is likely to be unitary, -1.0 +or – 0.3. Total expenditure on international call by all consumer groups is likely to remain at the same level.

The new entrants to the markets will capture some percentage of the market share. Strong price competition is likely to occur between the providers. The government monopoly provider will face strong competition from the new entrants. It will be forced to lower its charges. The lower charges will lead to an expansion of demand. At the same time some of its customers will switch over to the new providers if they are not tied down by long-term contracts.

2. Impact on the Current Monopoly Providers

The impact on the current monopoly providers is difficult to estimate and will be affected by how rapidly they adjust to the new competitive environment. They will need to increase their productivity and in some cases cut operating costs. Some providers may reduce the size of their workforce. The experience of Tonga suggests that the price elasticity of demand is likely to be close to unitary or unit elasticity. If this is the case, then the total revenue received by telecommunications operators will remain about the same. A key issue is how to deal with the provision of uneconomic services to the remote rural areas and the expansion of the network to new remote areas. We recommend that each country establish a universal service fund and that they require all operation to contribute equitably to the fund. The Philippines has implemented such as system.

3. Impact on total Employment in the ICT Industry.

The introduction of competition and lowering of prices should result in an expansion of total employment in the industry as demand for services expand due to lower prices. New jobs will be created in the new telecommunication firms that enter the market. Lower telecommunications prices will have a positive impact across the whole on the private sector and government sector. It will also have benefits in promoting e-commerce and open up new employment opportunities as discussed in section IV.R.

S. Post-Liberalization Regulatory Arrangements

1. Regional and National level Regulatory arrangements to promote Competition

Effective regulation of the providers is essential to ensure that the full benefits of competition are realized. The cost of regulation is minimal and insignificant in comparison to the benefits of effective regulation. At the most it might cost 1% of total sector revenue. The important issue is not the economic cost of regulation but ensuring that the regulators have the technical and financial skills to ensure the enforcement of strong competition on a level playing field.

The importance of effective regulation is emphasised in a 2004 study on Telecommunications deregulation in the ASEAN countries. Quoting from the report:

"There is a positive and reinforcing connection between market liberalization and telecommunications development. Experience, including within ASEAN, shows that liberalization is associated with higher service quality, greater levels of teledensity, lower prices and improved customer choice.

However, liberalization and the introduction of competition are not sufficient to achieve these results, and in the absence of complementary measures there are some risks, including those of the capture of essential infrastructure and abuse of market power by incumbents.

Another consequence may be the withdrawal of services from relatively poor or isolated areas as competitive processes undermine the basis for the cross subsidies that currently fund those services."

Source: Liberalization and Harmonization of ASEAN Telecommunications, REPSF Project No. 02/009 The Asia Pacific School of Economics and Government, ANU, Society for the Advancement of Technology Management at the University of the Philippines, Thailand Development Research Institute, Final Main Report, July 2004

In most FICs there currently is a small group of 2-4 staff involved in regulatory activities in the appropriate ministry. The skills level of the current regulatory staff may need enhancing when the sector is opened for competition through the licensing of new entrants. It is important to ensure that there is a level playing field and that the former government monopoly provider does not use its power to block access of consumers to the new providers. In most FICs it would be cost effective to establish a single utilities regulator to regulate the energy and ICT sectors rather than have a separate regulator for each utility.

Our report recommends that the FICS should consider establishing a regional authority similar to the Eastern Caribbean Telecommunications Authority that was established by the Governments of five Eastern Caribbean states to promote market liberalization and competition in telecommunications of the contracting states. ECTEL is regional agency that provides advice and makes recommendations on telecommunications matters and helps to manage the sector in its member states. The organization's headquarters is located in Castries, Saint Lucia. It is supported at the national level in each member state by a National Telecommunications Regulatory Commission (NTRC) that interfaces with users and providers and helps to manage the licensing process.

V. CONCLUSIONS

A. Main Findings

1. International case studies of telecommunications deregulation undertaken by the International Telecommunication Union and other researchers clearly demonstrate the substantial economic benefits that result from opening monopoly government-dominated telecommunication markets to private sector competition by licensing new providers. The research shows that competition results in improved service quality and lower prices, a higher level of investment in new infrastructure, more rapid adoption of new technology, increased bandwidth and improved productivity and efficiency in the use of resources. Competitive telecommunications markets will generate substantial net economic benefits to the citizens of the Pacific Islands to all consumer groups including urban and rural residential subscribers, private sector business firms, schools and universities, public enterprises and government department and agencies. All consumers stand to gain and the costs of regulation are tiny.
2. The economic benefits to consumers in the Pacific islands from lower telecommunication charges for international calls, mobile calls and Internet usage are estimated to be

US$66 million a year for the Forum Island countries (FICs) as a whole, based on the assumption that the telecommunication markets are fully competitive with strong price competition among the providers operating on a level playing field. It is assumed that the regulator will ensure that new entrants have access to the fixed line network owned by the former monopoly provider at fair access rental rates. This economic benefit is in the form of consumer surplus.

3. Over a five-year period the total consumer surplus resulting from deregulation and competition in the FICs is estimated to have a present value of **US$285.9 million** at a 5% discount rate and **US$250.9** discounted at 10%. These estimates are based on revenue data drawn from the International Telecommunications Union (ITU) Database 2005 edition, on total telecommunications revenue for each ITU member country and a set of assumptions about the likely level of reduction of call charges following competition, the threat of competition in contestable markets, projections of market segment growth rates, the profitability of different market segments and the price elasticity of demand for services in the different countries. Almost all the consumer surplus is estimated to come from the sharp reduction in international telephone call rates and peak rate mobile phone rates and Internet costs.
4. The introduction of competition will also lead to improved service quality and a more rapid increase in bandwidth but no attempt has been made in this study to estimate the monetary value of quality improvement based on the willingness of consumers to pay. The New Zealand experience with telecommunication deregulation shows that the benefits of quality improvement may be greater than the benefits from call rate reductions. The benefits to New Zealand consumers were improved service availability, in terms of access to new services, fault service response, and new service installation times.
5. The longer-term dynamic impacts of deregulation and the development of competitive telecommunication markets will be most beneficial for private sector development, trade and investment promotion and will support the generation of an estimated 20,000 new jobs ICT-enabled businesses such as call centres and back office services.
6. International case studies demonstrate that the costs of providing high quality regulation of the telecommunications markets following the introduction of competition are minimal and usually less than 1% of industry total revenue.
7. It is important for FIC governments to allocate sufficient resources to strengthening national utilities regulatory authorities and to enact appropriate modern regulatory laws and regulations prior to deregulation to support the introduction of strong and fair competition.
8. International experience demonstrates that it is not necessary to maintain a public telecommunications monopoly in order to cross-subsidies the provision of telecommunications services to rural areas and remote island communities through profits by from international calls. The universal service objectives of expanding services to rural areas can be achieved by establishing a universal service fund and requiring all telecom providers to contribute to the fund. It may then be used to provide universal service obligations through contracting out these activities to providers.
9. There are likely to be substantial cost savings and economic benefits from all FICs enacting a common set of E-commerce laws. Most governments have recognized the need for new laws to support national ICT policy and ICT development plans. Fiji Islands, Cook Islands and Tonga have made good progress in drafting a set of modern

e-commerce laws benchmarked on international best practice. A regional approach to e-commerce laws has many advantages.

10. There may be a sound case for establishing a Pacific Islands regional telecommunication authority similar to the Eastern Caribbean Telecommunications Authority to promote liberalization and fair competition, harmonization of regulations and policies, universal service, fair pricing, access to advanced services, and overall sector development across the Pacific Islands. There are likely to be substantial economies of scale and other technical advantages from adopting a regional approach to industry regulation especially since the smaller FICs may not be able to attract professionally skilled ICT regulatory specialists to lead the national regulatory authorities.

B. Recommendations

1. All Pacific Island countries should deregulate their telecommunications markets and at the same time establish effective national regulatory authorities to ensure all new and existing operators play by the rules of fair competition. The regulator should ensure that not single operator can exploit a dominant market position to unfairly prevent competition or to establish barriers to entry. There should be a level playing field.
2. Governments should establish a telecommunications community service fund and require all operators to make contributions to the fund based on capacity to pay and an equity formula. The fund should be used to finance and subsidize the provision and expansion of services to consumers residing rural and remote areas.
3. A regional approach to the development of e-commerce cyber laws should be adopted to ensure all countries enact the same unified set of modern laws and regulations.
4. A regional approach should be adopted for the institutional strengthening and technical support for national utility regulatory authorities. The Forum Island Countries (FICs) should establish a Pacific Islands regional telecommunication authority similar to the Eastern Caribbean Telecommunications Authority to assist member countries deregulate their telecommunications sector.
5. A regional undersea cable project should be implemented under the leadership of Pacific Islands Forum Secretariat (PIFS) to link all FICs to the Southern Cross cable network. (see appendix 3 Undersea Cable Proposal by M. Robinson)

APPENDIX 1: INTERNATIONAL TELECOMMUNICATION UNION PACIFIC ISLAND COUNTRY DATA

PAPUA NEW GUINEA

National currency: Kina — Area: 462'840 km2

Indicators			Unit	Year Ending 31.12									
				1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DEMOGRAPHY, ECONOMY													
61	Population	1	10x3	4'129	4'259	4'393	4'532	4'674	4'822	4'974	5'130	5'295	5'464
62	Households	2	10x3	909	950	990	1'010	1'030	1'050	1'070	1'090	1'110	1'138
63	Gross domestic product (GDP)	3	10x6	4'867	5'381	5'888	6'881	7'064	7'789	8'781	11'088	...	...
652	Average annual exchange rate per US$	4		0.98	1.01	1.28	1.32	1.44	2.07	2.57	2.78	3.39	3.90
66_95	Consumer price index (1995=100)	5		83	85	100	112	116	132	151	175	191	214
TELEPHONE NETWORK													
112	Main telephone lines in operation			39'321	40'017	43'648	46'796	54'087	56'938	59'773	64'835	62'000	62'000
91	Main telephone lines per 100 inhabitants			0.95	0.94	0.99	1.03	1.16	1.18	1.20	1.26	1.17	1.13
1142	% digital main lines		%	41.0	55.0	58.0	61.0	...	75.0	75.0	79.0	...	...
116	% residential main lines		%	20.0	27.0	...	...	...	...	...	...	...	...
1162	% main lines in urban areas			86	86	...	...	...	...	...	...	...	...
1112	Public payphones			480	477	456	...	...	750	800	810	...	...
117	Line capacity of local exchanges			52'268	52'292	61'190	65'300	69'700	74'400	79'500	85'000	90'865	...
123	Waiting list for main lines			152	277	...	...	...	500	455	200	...	...
MOBILE SERVICES													
271	Cellular mobile telephone subscribers			—	—	—	2'285	3'857	5'558	7'059	8'560	10'700	15'000
911	Cellular subscribers per 100 inhabitants			—	—	—	0.05	0.08	0.12	0.14	0.17	0.20	0.27
OTHER SERVICES													
412	Private leased circuits			123	123	...	...	...	...	...	...	...	...
TRAFFIC													
1311m	Local telephone (minutes)		10x6	...	...	...	...	...	25	26	32	...	...
1311im	Dial-up Internet traffic (minutes)		10x6	...	...	...	...	...	5	6	8	...	...
132m	Int'l outgoing telephone (minutes)		10x6	22	21	24	27	23	25	25	24	25	...
132mi	Int'l incoming telephone (minutes)		10x6	...	...	...	...	...	21	20	19	...	...
STAFF													
51	Full-time telecommunication staff			1'397	1'695	2'026	2'047	...	1'790	1'790	1'790	...	...
51f	- of which: female			...	...	...	...	...	340	340	340	...	...
QUALITY OF SERVICE													
143	Faults per 100 main lines per year		%	...	...	10.1	...	...	...	...	...	...	...
TARIFFS													
151	Residential teleph. connection charge			60	60	60	...	...	120	120	120	50	50
151b	Business teleph. connection charge			220	220	220	...	...	560	560	560	50	50
152	Residential teleph. monthly subscription			...	...	...	...	...	3	3	3	4	7
152b	Business teleph. monthly subscription			...	...	...	...	...	11	11	11	11	20
153	3-minute local call (peak rate)			0.17	0.17	0.17	...	...	0.80	0.80	1.00	0.22	0.30
153o	3-minute local call (off-peak rate)			...	...	...	...	...	0.50	0.50	0.70	0.22	0.30
151c	Cellular connection charge			—	—	—	...	...	1'200	1'200	1'200	90	90
152c	Cellular monthly subscription	6		—	—	—	...	...	200	200	250	40	40
153c	Cellular - 3-min. local call (peak rate)			—	—	—	...	...	1.80	1.80	2.25	2.25	2.25
153co	Cellular - 3-min. local call (off-peak rate)			—	—	—	...	...	1.80	1.80	2.25	2.25	2.25
REVENUE AND EXPENSE													
75	Total telecom services revenue		10x6	138	142	140	150	...	184	188	220	...	...
71	- Telephone service revenue		10x6	...	...	...	...	...	157	159	183	...	...
741	- Mobile communication revenue		10x6	—	—	—	...	...	9	10	12	...	...
CAPITAL EXPENDITURE													
81	Annual telecom. investment		10x6	...	...	...	...	...	161	165	182	...	...
BROADCASTING													
965	Television receivers	7		11'000	12'200	15'000	16'500	18'000	20'000	60'000	100'000	110'000	...
965h	Television equipped households	8		...	...	135'000	135'000	14'000	15'000	50'000	85'000	90'000	...
965c	Cable TV subscribers	9		...	...	...	...	...	...	18'000	20'000	22'000	...
INFORMATION TECHNOLOGY													
422	Personal computers			...	...	...	...	...	200'000	240'000	280'000	300'000	321'000
4213	Internet subscribers			...	...	...	...	...	...	...	27'000	...	...
4212	Estimated Internet users			...	...	...	100	5'000	12'000	35'000	45'000	50'000	75'000
4214	International Internet Bandwidth (Mbps)			—	—	—	—	...	2	3	3	6	6
99	Internet users per 100 inhabitants			...	...	...	—	0.11	0.25	0.70	0.88	0.94	1.37

Source: Telikom PNG.

(1) Source: UN; ITU estimate. 1990: Latest census. (2) ITU estimate. (3) Source: IMF. 2000: Bank of Hawaii. (4) Source: IMF. From 1998: Asian Development Bank. (5) Source: IMF. (6) From 2001: Cellnet. (7) 1994: Source: National Broadcasting Commission. ITU estimate. (8) ITU estimate. (9) 2001: ITU estimate.

FIJI

National currency: Dollar — Area: 18'332 km2

Indicators			Unit	Year Ending 31.12 1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DEMOGRAPHY, ECONOMY													
61	Population	1	10x3	752	759	768	774	788	797	806	810	813	820
62	Households	2	10x3	126	127	128	129	130	132	133	134	136	137
63	Gross domestic product (GDP)	3	10x6	2'565	2'673	2'800	2'962	3'060	3'283	3'588	3'505	3'836	2'089
652	Average annual exchange rate per US$	4		1.54	1.46	1.41	1.40	1.44	1.99	1.97	2.13	2.28	2.19
66_95	Consumer price index (1995=100)	5		97	98	100	103	107	113	115	116	121	122
TELEPHONE NETWORK													
112	Main telephone lines in operation	6		53'997	59'471	64'772	70'018	71'793	76'933	81'518	86'400	92'222	97'515
91	Main telephone lines per 100 inhabitants			7.18	7.84	8.43	9.05	9.12	9.66	10.11	10.66	11.34	11.90
1142	% digital main lines		%	84.3	85.6	85.6	84.0	99.3	99.7	99.8	100.0	98.0	99.8
116	% residential main lines		%	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	60.0
1162	% main lines in urban areas			44	44	44	44	44	80	...	...	44	44
1112	Public payphones			377	392	577	687	822	887	1'018	1'259	1'500	1'000
117	Line capacity of local exchanges			64'510	70'086	77'610	84'512	90'778	91'582	94'700	98'000	105'980	110'726
123	Waiting list for main lines			8'069	9'360	8'927	8'103	6'445	3'125	5'166	5'139	4'032	4'969
MOBILE SERVICES													
271	Cellular mobile telephone subscribers			—	1'100	2'200	3'700	5'200	8'000	23'380	55'057	80'933	89'900
2712	- Digital cellular subscribers			—	1'100	2'200	3'700	5'200	8'000	23'380	55'057	80'933	89'900
271p	- Cellular prepaid subscribers			...	...	...	...	...	—	—	...	...	81'812
271pop	Coverage of population (%)	7	%	...	...	...	...	...	...	...	40.0	49.5	55.0
911	Cellular subscribers per 100 inhabitants			—	0.14	0.29	0.48	0.66	1.00	2.90	6.79	9.95	10.97
OTHER SERVICES													
28	ISDN subscribers			—	—	—	—	—	—	—	—	20	...
28c	ISDN B channel equivalents	8		—	—	—	—	—	—	—	—	40	...
412	Private leased circuits			...	...	...	...	...	1'322	...	...	84	500
TRAFFIC													
1311m	- Local telephone (minutes)		10x3	...	...	...	...	...	...	...	258'118	89'300	89'300
1312m	- National trunk telephone (minutes)		10x3	...	...	...	...	...	...	...	42'470	39'500	39'500
132m	Int'l outgoing telephone (minutes)	9	10x3	13'249	14'289	15'148	16'000	17'155	17'985	18'800	15'025	19'700	23'165
132mi	Int'l incoming telephone (minutes)		10x3	21'948	24'000	27'112	30'000	34'231	34'998	...	40'385	57'000	67'959
133wm	Total mobile (minutes)		10x3	...	...	...	...	...	...	...	17'347	21'684	39'782
133sm	Mobile SMS sent		10x3	...	...	...	...	...	...	...	...	...	2'992
STAFF													
51	Full-time telecommunication staff			950	1'106	1'068	1'061	1'096	1'183	1'197	1'354	1'585	2'000
51f	- of which: female			...	...	...	...	...	920	...	...	...	600
QUALITY OF SERVICE													
141	% teleph. faults cleared by next day		%	...	...	...	...	...	...	...	60	90	75
143	Faults per 100 main lines per year		%	210.0	190.0	180.0	167.0	194.0	153.0	128.0	135.0	117.0	9.3
TARIFFS													
151	Residential teleph. connection charge			114.00	114.00	114.32	84.52	84.52	84.52	84.52	84.52	84.52	84.52
151b	Business teleph. connection charge			286.00	286.00	285.98	285.95	285.95	285.95	285.95	285.95	285.95	285.95
152	Residential teleph. monthly subscription			5.32	5.32	5.32	5.32	5.32	5.32	5.32	3.12	2.84	2.84
152b	Business teleph. monthly subscription			6.78	6.78	6.78	6.78	6.78	6.78	6.78	4.58	4.16	4.16
153	3-minute local call (peak rate)	10		0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
153o	3-minute local call (off-peak rate)			0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
151c	Cellular connection charge			—	110	110	110	110	110	110	110	—	—
152c	Cellular monthly subscription			—	44	44	44	44	44	44	44	33	33
153c	Cellular - 3-min. local call (peak rate)			—	0.60	1.80	1.80	1.80	1.80	1.80	1.80	0.66	0.66
153co	Cellular - 3-min. local call (off-peak rate)			—	0.60	1.80	1.80	1.80	1.80	1.80	1.80	0.66	0.66
REVENUE AND EXPENSE													
75	Total telecom services revenue		10x6	76.14	93.00	97.40	106.70	111.90	123.00	138.00	186.50	201.00	155.00
71	- Telephone service revenue		10x6	60.77	72.00	79.00	92.80	90.50	100.30	100.50	149.50	148.00	88.00
741	- Mobile communication revenue		10x6	—	0.80	1.30	2.20	3.40	4.70	26.00	26.37	37.66	53.01
CAPITAL EXPENDITURE													
81	Annual telecom. investment		10x6	18.70	10.30	23.30	34.00	39.00	21.50	32.00	32.65	42.00	83.00
841m	- Mobile communication investment		10x6	...	...	...	...	...	...	...	5.96	8.21	4.90
BROADCASTING													
965	Television receivers	11		40'000	50'000	70'000	75'000	78'000	80'000	88'908	92'000	95'100	96'000
965h	Television equipped households			...	45'000	63'000	67'500	70'200	72'000	80'017	82'800	85'590	87'000
965s	Home satellite antennas			25	70	190	...	...	...	139	105	111	113
INFORMATION TECHNOLOGY													
422	Personal computers	12		...	...	...	...	...	32'000	34'000	36'000	38'000	40'000
4213	Internet subscribers			50	60	60	407	1'080	2'061	2'500	3'500	5'500	7'600
4212	Estimated Internet users			50	60	70	500	1'750	5'000	7'500	12'000	15'000	50'000
4214	International Internet Bandwidth (Mbps)			—	—	...	...	...	...	1	4	...	8
99	Internet users per 100 inhabitants			0.01	0.01	0.01	0.06	0.22	0.63	0.93	1.48	1.84	6.10
423	Public Internet access facilities			...	...	...	...	...	...	...	...	11	15

Source: Telecom Fiji.

(1) Source: Telecom Fiji. Since 1989: Fiji Islands Statistics Bureau. (2) Source: 1976: UN. Telecom Fiji. ITU estimate. (3) Source: IMF. Since 2000: Reserve Bank of Fiji. (4) Source: IMF. (5) Source: IMF. (6) 2000: ITU estimate. (7) Vodacom Fiji. (8) ITU estimate. (9) 2000: ITU estimate. (10) Flat rate. (11) Source: Ministry of Information, Broadcasting and Telecommunications. (12) ITU estimate.

SOLOMON ISLANDS

Area: 29'790 km2

National currency: Dollar

Indicators			Unit	Year Beginning 01.04 1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DEMOGRAPHY, ECONOMY													
61	Population	1	10x3	346	356	366	376	387	398	409	420	432	444
62	Households	2	10x3	52	54	55	57	59	60	62	64	65	67
63	Gross domestic product (GDP)	3	10x6	755	897	1'059	1'226	1'391	1'449	1'376	1'239	1'399	...
652	Average annual exchange rate per US$	4		3.19	3.29	3.41	3.57	3.72	4.82	4.84	5.09	5.30	6.75
66_95	Consumer price index (1995=100)	5		81	91	100	112	121	136	147	...	...	...
TELEPHONE NETWORK													
112	Main telephone lines in operation	6		5'460	6'020	6'502	7'210	7'695	7'907	8'132	7'689	7'389	6'601
91	Main telephone lines per 100 inhabitants			1.58	1.69	1.78	1.92	1.99	1.99	1.99	1.83	1.71	1.49
1142	% digital main lines		%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
116	% residential main lines		%	...	...	...	...	...	40.0	50.0	65.0	...	...
1162	% main lines in urban areas			...	...	...	...	...	45	50	...	...	...
1112	Public payphones			64	78	108	134	153	184	179	254	...	...
117	Line capacity of local exchanges			5'460	5'876	6'502	...	...	10'000	20'000	30'000	...	...
123	Waiting list for main lines	7		223	163	184	36	37	44	42	36	...	...
MOBILE SERVICES													
271	Cellular mobile telephone subscribers			—	144	230	337	658	702	1'093	1'151	967	999
271pop	Coverage of population (%)		%	...	...	...	...	...	...	25.0	35.0	...	...
911	Cellular subscribers per 100 inhabitants			—	0.04	0.06	0.09	0.17	0.18	0.27	0.27	0.22	0.22
TRAFFIC													
132m	Int'l outgoing telephone (minutes)	8	10x3	1'806	2'064	2'979	2'741	3'499	2'025	1'912	2'997	5'907	...
132mi	Int'l incoming telephone (minutes)		10x3	...	...	2'050	3'202	3'248	2'443	3'647	6'649	...	...
STAFF													
51	Full-time telecommunication staff	9		262	267	276	278	277	272	254	151	151	...
51f	- of which: female			...	...	...	...	...	38	36	22	...	...
51w	- Mobile communications staff			...	...	...	...	...	12	...	...	...	...
QUALITY OF SERVICE													
141	% teleph. faults cleared by next day		%	...	...	...	...	...	88	87	...	...	...
143	Faults per 100 main lines per year		%	...	...	...	...	...	5.0	5.0	...	...	...
TARIFFS													
151	Residential teleph. connection charge			...	...	...	200.00	200.00	200.00	200.00	250.00	200.98	200.98
151b	Business teleph. connection charge			...	...	...	240.00	240.00	240.00	240.00	227.91	227.91	227.91
152	Residential teleph. monthly subscription			...	...	...	36.00	38.40	38.40	38.40	38.40	32.00	32.00
152b	Business teleph. monthly subscription			...	...	...	40.00	40.00	40.00	40.00	48.00	48.00	48.00
153	3-minute local call (peak rate)			...	0.37	...	0.46	0.46	0.46	0.46	0.46	0.46	0.46
153o	3-minute local call (off-peak rate)			...	...	...	...	0.46	0.46	0.46	0.46	0.46	0.46
151c	Cellular connection charge			—	...	...	...	...	150	190	190	190	190
152c	Cellular monthly subscription			—	...	...	...	...	45	45	45	45	45
153c	Cellular - 3-min. local call (peak rate)			—	...	...	...	...	6.12	6.12	6.12	6.12	6.12
153co	Cellular - 3-min. local call (off-peak rate)			—	...	...	...	...	6.12	6.12	6.12	6.12	6.12
REVENUE AND EXPENSE													
75	Total telecom services revenue		10x6	30.06	38.24	47.18	51.98	66.44	67.60	68.00	61.05	64.09	...
CAPITAL EXPENDITURE													
81	Annual telecom. investment		10x6	5.34	14.98	11.62	10.30	17.62	25.54	114.00	112.00	...	...
BROADCASTING													
965	Television receivers	10		2'000	2'000	2'500	3'000	4'000	5'000	5'000	5'000	5'000	5'000
965h	Television equipped households	11		...	...	1'000	1'500	2'000	2'000	2'400	2'600	2'800	2'800
965s	Home satellite antennas			18	20	500	600	750	645	540	750	...	...
INFORMATION TECHNOLOGY													
422	Personal computers	12		...	...	...	...	9'000	10'000	14'000	16'000	17'000	18'000
4213	Internet subscribers	13		...	...	...	...	...	800	1'000	1'150	906	988
4213ds	- DSL Internet subscribers			...	...	...	...	...	...	—	—	—	108
4212	Estimated Internet users			...	...	90	1'000	1'500	2'000	2'000	2'000	2'000	2'200
4214	International Internet Bandwidth (Mbps)	14		—	—	—	...	...	...	0.3	0.3	0.5	0.5
99	Internet users per 100 inhabitants			...	...	0.02	0.27	0.39	0.50	0.49	0.48	0.46	0.50

Source: Cable & Wireless Solomon Islands Ltd.

(1) Source: 1986 and 1999 census. Other years:UN and ITU estimate. (2) 1970, 1976, 1986, 2000: UN. Other years: ITU estimate. (3) Source: IMF. 1983-2000: Asian Development Bank. 2001: World Bank. (4) Source: IMF. From 1998: Asian Development Bank. (5) Source: IMF. (6) Billable lines. 1982-84,1988: ITU estimate. Between 2000-20003: The number of fixed lines declined due to civil war. (7) 1984: ITU estimate. (8) 1983: ITU estimate. (9) 1983-84: ITU estimate. (10) Source: Solomon Islands Broadcasting Corporation. Terrestrial TV broadcasting currently not available. Sets refer to video users or home satellite reception. 1992: UNESCO. (11) TV households. Source: Solomon Islands Broadcasting Corporation. (12) ITU estimate. (13) 2000-20002: The number of Internet subscribers declined due to civil war. (14) 2002: Pacific Islands Forum Secretariat. Pacific ICT Survey 2002.

SAMOA

National currency: Tala — Area: 2'841 km2

Indicators			Unit	Year Ending 31.12 1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DEMOGRAPHY, ECONOMY													
61	Population	1		164'700	166'400	168'100	169'800	171'500	173'300	175'100	176'848	178'600	180'400
62	Households	2		21'960	22'187	22'413	22'640	22'867	23'107	23'347	23'580	23'800	24'000
63	Gross domestic product (GDP)	3	10x6	305	479	478	556	625	659	703	774	887	...
652	Average annual exchange rate per US$			2.57	2.54	2.47	2.46	2.56	2.95	3.01	3.29	3.48	3.38
66_95	Consumer price index (1995=100)			92	103	100	105	113	115	115	117	121	131
TELEPHONE NETWORK													
112	Main telephone lines in operation	4		7'100	7'400	7'800	8'251	8'451	8'480	8'500	8'520	9'670	11'786
91	Main telephone lines per 100 inhabitants			4.31	4.45	4.64	4.86	4.93	4.89	4.85	4.82	5.41	6.53
1111	% households with a telephone		%	...	...	69.0	...	82.0	86.0	...	...	...	...
1142	% digital main lines		%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
116	% residential main lines		%	75.0	80.0	80.0	82.0	85.0	89.0	90.0	...	...	57.0
1162	% main lines in urban areas			...	...	...	...	...	...	...	...	78	72
1163	Localities with telephone service			...	...	...	...	...	...	...	...	...	12
1112	Public payphones			...	88	100	100	150	150	150	...	...	15
117	Line capacity of local exchanges			9'000	9'000	9'000	9'000	9'000	9'000	...	...	...	14'500
123	Waiting list for main lines			600	500	800	1'200	1'500	2'500	3'500	...	3'623	7'586
MOBILE SERVICES													
271	Cellular mobile telephone subscribers	5		—	—	—	—	766	1'480	2'432	2'500	2'500	2'700
271pop	Coverage of population (%)		%	...	...	...	...	...	60.0	...	...	...	...
911	Cellular subscribers per 100 inhabitants			—	—	—	—	0.45	0.85	1.39	1.41	1.40	1.50
OTHER SERVICES													
28	ISDN subscribers			—	—	—	—	—	—	—	—	2	9
28c	ISDN B channel equivalents			—	—	—	—	—	—	—	—	4	396
412	Private leased circuits			...	...	...	...	...	...	...	...	...	75
TRAFFIC													
132m	Int'l outgoing telephone (minutes)	6	10x3	3'800	4'100	6'767	6'803	7'109	9'175	10'192	12'000	13'746	7'298
132mi	Int'l incoming telephone (minutes)		10x3	5'900	7'500	8'500	9'800	8'208	10'395	11'814	...	12'908	19'030
133wm	Total mobile (minutes)		10x3	...	...	...	...	...	3'100	...	...	...	...
STAFF													
51	Full-time telecommunication staff	7		195	174	167	200	250	260	210	200	185	252
51f	- of which: female			...	...	...	...	...	...	...	...	...	97
51w	- Mobile communications staff			...	...	...	...	5	5	...	...	...	...
QUALITY OF SERVICE													
141	% teleph. faults cleared by next day		%	...	...	...	...	...	...	...	...	...	20
143	Faults per 100 main lines per year		%	...	...	45.0	40.0	36.0	29.0	22.0	...	...	...
TARIFFS													
151	Residential teleph. connection charge			50	50	50	50	50	50	50	60	60	60
151b	Business teleph. connection charge			50	50	50	50	50	50	50	85	85	85
152	Residential teleph. monthly subscription			10	10	10	10	10	10	10	15	15	15
152b	Business teleph. monthly subscription			15	15	15	15	15	15	15	10	10	10
153	3-minute local call (peak rate)			0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11
153o	3-minute local call (off-peak rate)			0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11
151c	Cellular connection charge			—	—	—	...	...	125	125	125	125	125
152c	Cellular monthly subscription			—	—	—	...	30	30	30	30	30	30
153c	Cellular - 3-min. local call (peak rate)			—	—	—	...	...	...	...	...	0.90	0.90
REVENUE AND EXPENSE													
75	Total telecom services revenue		10x6	15.10	17.00	19.99	22.65	25.27	29.00	30.00	32.00	35.00	39.10
CAPITAL EXPENDITURE													
81	Annual telecom. investment		10x3	...	...	2'800	2'800	2'500	3'000	4'000	...	...	...
83	- Annual investment for telephone service		10x3	...	...	...	...	...	...	...	...	...	11'790
BROADCASTING													
965	Television receivers			18'000	20'000	22'000	23'000	23'000	24'000	24'000	25'000	26'000	26'000
965h	Television equipped households			...	...	21'600	22'000	22'000	22'000	22'000	22'000	23'000	23'000
965c	Cable TV subscribers			—	—	210	225	480	600	...	...	...	...
965s	Home satellite antennas			—	—	—	—	50	100	...	...	...	...
INFORMATION TECHNOLOGY													
422	Personal computers	8		...	...	100	300	500	800	900	1'000	1'100	1'200
4213	Internet subscribers			...	...	...	...	100	130	150	300	1'000	1'320
4212	Estimated Internet users			...	...	...	...	300	400	500	1'000	3'000	4'000
4214	International Internet Bandwidth (Mbps)	9		—	—	—	—	...	...	...	0.3	2.3	3.0
99	Internet users per 100 inhabitants			...	...	...	...	0.17	0.23	0.29	0.57	1.68	2.22

Source: General Post Office.

(1) Source: Until 1990: UN. 1991 and 2000 census datat. Other years: ITU estimate. (2) 1976, 2000: UN. Other years: ITU estimate. (3) Source: Asian Development Bank. 2001: World Bank. (4) 1982-1989 and 99-2000: ITU estimate. (5) 1997: as of 10 February, 1998. (6) 1983: ITU estimate. (7) 1992-1993: ITU estimate. (8) ITU estimate. (9) 2002: Pacific Islands Forum Secretariat. Pacific ICT Survey 2002.

FRENCH POLYNESIA

Area: 3'941 km2

National currency: CFP Franc

Indicators			Unit	Year Ending 31.12 1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DEMOGRAPHY, ECONOMY													
61	Population	1	10x3	210	215	218	220	223	226	230	233	236	240
62	Households	2	10x3	48	49	50	50	51	51	52	53	54	55
63	Gross domestic product (GDP)	3	10x6	344'453	360'698	362'523	392'266	385'644	410'310	412'000	446'100	523'932	..
652	Average annual exchange rate per US$	4		107.16	101.10	91.10	93.30	106.12	99.90	111.97	113.57	133.35	112.58
66_95	Consumer price index (1995=100)			...	...	...	...	...	...	115	117	118	...
677e	Telecom equipment exports (US$)		10x6	...	...	...	...	...	...	1	1	—	—
677i	Telecom equipment imports (US$)		10x6	...	...	...	...	...	...	11	14	17	15
TELEPHONE NETWORK													
112	Main telephone lines in operation	5		44'943	47'078	48'655	51'236	52'297	53'089	52'272	53'689	52'632	52'500
91	Main telephone lines per 100 inhabitants			21.35	21.88	22.32	23.34	23.47	23.48	22.78	23.01	22.26	21.87
1142	% digital main lines		%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
116	% residential main lines		%	...	...	...	73.0	75.0	...	...	...	...	...
1112	Public payphones			579	474	514	541	573	551	748	796	853	...
117	Line capacity of local exchanges			50'049	...	...	74'849	...	...	...	...	...	...
123	Waiting list for main lines			718	...	...	...	...	...	...	...	...	...
MOBILE SERVICES													
271	Cellular mobile telephone subscribers			—	—	1'150	2'719	5'427	11'060	21'929	39'900	67'300	90'000
2712	- Digital cellular subscribers			—	—	1'150	2'719	5'427	11'060	21'929	39'900	67'300	90'000
271pop	Coverage of population (%)		%	...	...	...	...	...	...	80.0	...	70.0	...
911	Cellular subscribers per 100 inhabitants			—	—	0.53	1.24	2.44	4.89	9.56	17.10	28.46	37.49
OTHER SERVICES													
28	ISDN subscribers			80	157	252	341	516	735	1'112	1'597	2'068	2'808
28c	ISDN B channel equivalents			606	1'530	1'288	1'718	2'348	3'066	4'156	5'230	6'030	7'128
412	Private leased circuits			450	...	437	448	...	...	511	...	...	...
TRAFFIC													
1311m	- Local telephone (minutes)		10x3	...	...	...	...	...	...	112'700	113'000	...	...
1312m	- National trunk telephone (minutes)		10x3	...	...	...	...	...	...	52'600	57'000	...	...
1311im	Dial-up Internet traffic (minutes)		10x3	...	...	...	...	...	...	51'614	100'000	...	...
1313w	Fixed-mobile (minutes)		10x3	...	...	...	...	...	6'000	...	...	...	...
132m	Int'l outgoing telephone (minutes)		10x3	7'636	7'610	8'259	8'138	9'239	12'348	14'630	17'400	18'300	...
132mi	Int'l incoming telephone (minutes)		10x3	8'481	...	...	...	...	...	...	...	...	...
133wm	Total mobile (minutes)		10x3	...	...	...	...	...	6'000	...	...	...	...
STAFF													
51	Full-time telecommunication staff	6		813	826	820	817	871	799	850	888	927	913
51w	- Mobile communications staff			...	...	...	...	...	200	...	...	...	...
QUALITY OF SERVICE													
141	% teleph. faults cleared by next day		%	...	...	...	...	...	...	87	...	...	...
143	Faults per 100 main lines per year		%	...	...	...	...	...	...	24.6	...	...	...
TARIFFS													
151	Residential teleph. connection charge			10'000	10'000	10'000	10'000	10'000	10'292	10'292	10'389	10'389	10'680
151b	Business teleph. connection charge			10'000	10'000	10'000	10'000	10'000	10'292	10'292	10'389	10'389	10'680
152	Residential teleph. monthly subscription			1'440	1'440	1'144	1'144	2'000	2'059	2'059	2'078	2'078	2'136
152b	Business teleph. monthly subscription			1'440	1'440	1'144	1'144	2'000	2'059	2'059	2'078	2'078	2'136
153	3-minute local call (peak rate)			32	32	32	32	32	33	33	33	33	34
153o	3-minute local call (off-peak rate)			32	...	...	...	32	33	33	33	33	33
151c	Cellular connection charge	7		—	—	...	...	...	...	...	...	6'900	2'505
152c	Cellular monthly subscription			—	—	5'900	5'900	3'900	...	...	...	2'300	—
153c	Cellular - 3-min. local call (peak rate)			—	—	288	288	...	...	...	...	366	366
153co	Cellular - 3-min. local call (off-peak rate)			—	—	...	...	...	...	...	...	366	366
153sm	Cellular - price of SMS			...	...	...	...	...	...	...	...	...	50
REVENUE AND EXPENSE													
75	Total telecom services revenue		10x6	9'565	9'835	9'838	9'096	9'300	9'860	10'832	16'071	18'186	19'335
71	- Telephone service revenue		10x6	8'256	...	...	8'318	8'072	...	7'914	11'909	12'386	13'235
741	- Mobile communication revenue		10x6	—	—	...	...	...	...	2'700	4'200	5'800	6'100
CAPITAL EXPENDITURE													
81	Annual telecom. investment		10x6	1'846	2'742	2'532	914	1'122	...	...	...	...	...
BROADCASTING													
965	Television receivers	8		44'700	46'300	47'400	48'900	50'100	51'200	52'200	53'300	54'400	55'000
965h	Television equipped households	9		40'700	42'100	43'100	44'400	45'600	46'500	47'500	48'500	49'400	50'200
965c	Cable TV subscribers			—	—	...	13'500	...	...	...	8'600	...	...
965s	Home satellite antennas			...	...	...	...	...	...	...	8'600	...	...
INFORMATION TECHNOLOGY													
422	Personal computers			...	...	...	...	...	...	51'407	75'115	66'221	70'000
4213	Internet subscribers			...	...	...	...	...	...	4'078	7'000	9'000	11'000
4212	Estimated Internet users			...	...	...	200	480	3'000	8'000	15'000	20'000	35'000
4214	International Internet Bandwidth (Mbps)			...	...	...	...	...	...	5	8	...	...
99	Internet users per 100 inhabitants			...	...	...	0.09	0.22	1.33	3.49	6.43	8.46	14.58

Source: Office des Postes et Télécommunications (OPT).

(1) Source: UN; ITU estimate. 1996: census. (2) 1977,1983,2000: UN. ITU estimate. (3) Source: IMF. 2000: Institut Statistique de Polynesie Francaise. 2001: World Bank. (4) Until 1989: World Bank. 1990-92: South Pacific Commission. 1993-2000: Bank of Hawaii. 2001: Trade New Zealand. (5) 2000: ITU estimate. (6) Including posts. (7) From 2002: Mobile tariffs refer to prepaid service. (8) Source: RFO, ITU estimates. (9) TV homes (sets). 1989 and 1996 census. ITU estimates since then.

APPENDIX 2: UNDERSEA CABLE PROPOSAL

Communications by Under sea Cable

A Concept Paper for the Solomon Islands Government

Martyn Robinson
Chief Executive Officer
Solomon Telekom Co Ltd.

A. Background

In January 2004 the Intelsat satellite 174 Degrees failed leaving the Solomon Islands without international communications for three days and without domestic communications for seven days. Most other countries in the Pacific were equally left without communications. They were in effect cut off from the outside world. This catastrophic event has highlighted the dependency of most Pacific countries, including the Solomon Islands, on the one mode of communications available to them, the satellite.

B. Benefits

This concept paper outlines some of the possible cable alternatives to satellite communications, thus alleviating the dependency on one type of communications and providing an alternative more secure system of communications for the Solomon Islands.

The provision of optic fibre cable into the Solomon Islands would have additional spin offs, including secure communications facilities and massive bandwidth for the dissemination of ICT to the people of the Solomon Islands. A cable access to the Solomon Islands would add to the strategic security of the region and country.

C. Disadvantages

Cable projects are inherently expensive and usually justified based on the expected traffic handling. In the Solomon Islands there is insufficient traffic to warrant a commercial decision on the matter. That leaves other issues to be considered alongside of the commercial benefits, such as security and bandwidth for ICT. There are three major costs relating to a cable project, these are the capital cost, the installation and the maintenance.

D. Solomon Telekom Company LTD

The matter of a cable into Solomon Islands has been discussed by the Board of Directors and it was agreed a major project development of this nature was way beyond the means of this small company. It was agreed that any such undertaking of basic infrastructure would need to be undertaken through the Government of the Solomon Islands in conjunction with one or more of the major aid donors to the country.

E. Option One – Papua New Guinea

Currently under discussion between Australia and Papua New Guinea is the diversion of the existing but no longer required cable, Pac Rim West between Sydney and Guam. This cable already passes through the Solomon Islands near the Reef Islands. The intention is to divert the cable to land at Port Moresby. There is the possibility for the Solomon Islands to join in the project to T off the new routing or to connect to the remaining Guam sector. This is probably the most cost effective proposal.

F. Option Two – New Caledonia

A new cable project is currently being planned by New Caledonia with the financial support of the French Government to connect New Caledonia to Sydney. Should this proceed then there would be the opportunity for the Solomon Islands to connect to New Caledonia via a cable. Initial indications are that a very soft loan would be forthcoming to the Government of the Solomon Islands from the mainland Chinese Government for such a project.

G. Option Three –Cable & Wireless Pacific Cable Project

Full details of this project have been provided to the Ministry of Communications, Aviation and Meteorology. This project was to basically connect most of the Pacific Countries into the cable network at Fiji.

H. Funding

Solomon Telekom cant afford it and it would be hard to justify on commercial grounds. Neither can the Solomon Island Government. Therefore in order to move this concept forward the Solomon Islands Government need to engage one or more of the major regional aid donors. An initial feasibility study needs to be undertaken.

I. Recommendation

It is recommended that cabling the Pacific Islands should be taken to the Pacific Island Forum to endeavour to get this concept adopted as a Pacific Forum policy. If this were to happen there would probably be more support form the various aid agencies.

APPENDIX 3: TELECOM FIJI TARIFFS,JUNE 2005

As authorised by the Commerce Commission in accordance with the Commerce Act 1998 Cap 50, tariff changes will be implemented effective from 1 June, 2005 for all TFL customers.

New Telecom Fiji Prices (Residential)

The new residential prices as determined by the Commerce Commission are as follows:

Call Type	Current	June 1, 2005	June 1, 2006	June 1, 2007
Line rental	$2.8400/mth	$8.00/mth	$10.00/mth	$12.00/mth
Local Calls	$0.1091/call	$0.1091/call	$0.1091/call	$0.1091/call
Intra Region	$0.1432/min	$0.1291/min	$0.1291/min	$0.1291/call
Inter Region	$0.4296/min	$0.2675/min	$0.1800/min	$0.1291/call
Fixed Line to Vodafone	$0.5500/min	$0.4950/min	$0.4400/min	$0.4125/min

- All prices are VEP; excludes VTSat, TRS and Radio services

New Telecom Fiji Prices (Business)

The new business prices as determined by the Commerce Commission are as follows:

Call Type	Current	June 1, 2005	June 1, 2006	June 1, 2007
Line rental Small bus. Business	$4.1600/mth	 $15.00/mth $35.00/mth	 $17.50/mth $40.00/mth	 $20.00/mth $45.00/mth
Local Calls Peak hour Off-peak hour	$0.1091/call	 $0.1091/min $0.1091/ 5 mins	 $0.1091/min $0.1091/ 5 mins	 $0.1091/min $0.1091/ 5 mins
Intra Region Peak hour Off-Peak hour	$0.1432/min	$0.1291/min	$0.1291/min	 $0.1291/min $0.1291/ 5 mins
Inter Region Peak hour Off-Peak hour	$0.4296/min	$0.2675/min	$0.1800/min	 $0.1291/min $0.1291/ 5 mins
Fixed Line to Vodafone	$0.5500/min	$0.4950/min	$0.4400/min	$0.4100/min

- All prices are VEP; Small business have = or < 2 lines; Peak hours: 9am – 12 noon Mon-Fri; Off-Peak hours: 12am – 9am & 12pm – 12am Mon-Fri; All day during weekends & Public Holidays; excludes VTSat, TRS & Radio Services.

International Direct Dial (IDD)

Examples of new international direct dial call prices are as follows:

Country	Current	June 1, 2005	June 1, 2006	June 1, 2007
Aust / NZ	$1.30/min	$0.6670/min	$0.6226/min	$0.5781/min
USA/UK/Canada	$2.19/min	$0.6670/min	$0.6226/min	$0.5781/min
India	$2.19/min	$1.2665/min	$1.1821/min	$1.0976/min
Tonga	$1.30/min	$0.8359/min	$0.7802/min	$0.7244/min
Samoa/Vanuatu	$1.38/min	$0.8359/min	$0.7802/min	$0.7244/min

- All prices are VEP; 25% IDD discount ceases from May 31st 2005
- Other countries available on request
- IDD rates apply to both Residential and Business Customers.

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